

Field Book
of
Willis L. Jepson

— — —

1911.

Berkeley, California.

— — —

If lost finder please return
to owner at Department of
Botany, University of California,
and receive reward.

Three Rivers

-Cont. from Vol. 23, page 172.

-There is probably more ill-treatment of animals in the Sierra Nevada by tourists and campers than there is ill-treatment by teamsters and drivers in San Francisco.

So frequently there is no feed for the animals. In the strings of a pack train the animals are frequently snapp^{ed} together. In going over difficult trails hooked strings suffer. There is a steep pitch going up to Rodgers Lake from Smedberg. The free strings took it nicely, but the tied animals had their heads

Three Rivers

pullled around on the zig-zag before they had started on the turn and were dreadfully marked in the slush, rocks and snow on mean trail and so lost their balance.

- *Diplacus glutinosus* is called "Dysentery Weed" at Three Rivers. Frank Britten has great faith in it and says it will one day be exploited. Cured up a gang of men at the Power House that went bad on the water after the rains, water which had come over pine-needles, etc. Says it will cure cholera morbus.

Aug. 9, 1911.

- Three Rivers is a delightful little primitive community that will be spoiled when the electric railway comes. The families are often remnants of the Kaweah Colony

Three Rivers to Maxson's

- Left Three Rivers with an old grey mare for riding animal and a pack mule. Grey mare an old dray horse I suspect. Difficult to handle as a riding animal, will not lead, not bridle-rein wise and doesn't know trail work. So I go back next day to Three Rivers from Maxson's for another animal. Glad to get rid of the wall-eyed old mare. Had the vicious horror of the mule's attachment which followed her like a dog.

Ranch, Aug. 10, 1911

- I notice that everyone hereabouts says "Redwood" in speaking of the Big Tree, *Sequoia gigantea*. There is a Redwood Mountain between Sequoia National Park and General Grant Park. There is also a Redwood Creek flowing southerly from it and I think there is a Redwood Cañon somewhere in the region.
- *Lupinus albus*, South Fork Kaurah near Maxson's. Charlie, my riding horse, grabs a mouthful at every opportunity.

Three Rivers to Blough

- Left Three Rivers. Mr. Welch loaned me his ^{favorite} riding horse Charlie and with Britten's mule I start out. A good many local people wondered that Mr. Welch would let me have the horse - no one else could get him!

Particularly surprised is Austin the Blacksmith.

- Chaparral above Maxson's as far as Blough Cave:

Cercocarpus parvifolius.

It is mostly slender and tall here, forced up by the high chaparral.

It is often very tall and tree-like. I note one tree 22 ft. h. and

Cave, August 12, 1911.

6 in. at butt. This is not an exceptional tree either altho they average far less. Yet I see no reason for taking this sp. out of my list of shrubs. It does not attain a definite a definite adult tree type or form. It is of irregular form in its maturity and more or less scraggly.

Rhus trilobata, as much as 6 ft. h.!

Ceanothus cuneatus, as much as 12 ft. h.

Fremontia californica, 16 ft. h. with a very distinct checked dark trunk bark.

Three Rivers to Blough Bar

- *Asclepias californica*. The leaves burnt a crisp golden brown. The trees make a really lurid blaze of a deep brick-red on the hillslopes (north and east slopes), extending from near Lemon Cove (i.e. first crest above) nearly to Blough Bar, ~~bank~~ ^{the mountain side} ~~ing~~ ^{high above Maxson's ranch.} There is a great deal of this species. It makes 40 per cent of the open stand where it grows.
- *Echinocystis macrocarpa* pods hanging from the vines over the bushes, the pods open at lower end.

Aug. 12, 1911.

Very striking and conspicuous.
 - How the mule hates to go back to the mountains! On a zigzag she turned (when the riding horse got to the angle of the zigzag) and bolted down trail. As the trail was narrow there was no heading her until after a long chase.

Clough Cave to Garfield Forest,
(S. Fork Kaweah River) 5000 ft.

No. 4652. *Quercus garryana*
var. *breweri*. Collected
on mountain side above
Clough Cave in the
chaparral belt below the
pine belt. The shrubs
exhibited a wonderful
diversity in leaf form
and texture.

Aug. 13, 1911.

Chaparral Belt below Pines but
above Clough Cave.

This formation is 6 to 8 ft. h.

- *Quercus garryana* var. *breweri*,
25-40% stand.
 - *Leaenothus integriramus* H. & A.
 - *Fremontia californica*
 - *Rhus diversiloba*. The Poi-
son^{oak} is scattered through
the chaparral.
 - *Chamaebatia foliolosa*, Moun-
tain Misery is thick on the
floor of this chaparral area.
 - *Quercus kelloggii* comes
up under protection of
the area and is now
6 to 10 feet above it
now.
 - *Rhamnus ilicifolia*
- (Continued on page 13).

Clough bar to Garfield Forest,
alt. 5000 ft.

- No. 4653. *Prunus subcordata*
leath preced no. ^{Smith.}
- No. 4654. *Ceanothus integrifolius*
^{var. ? puberulus (Greene) Abrams}
inua #11. with preced. no.
- No. 4655. Umbellifer. *Uelaea hartwegii* C. & R.
- No. 4656. *Philadelphus lewisii*
Pursh var. *californicus* Gray.
- No. 4657. *Staphylea bolanderi*
See p. 14. ^{Gray.}

Tulare Co.

Aug. 13, 1911.

Continued from p. 12.

- *Bercocarpus parvifolius*, a small scraggly tree but without character as an adult tree. So far as I notice the tree form does not differ from the bush form. It shows a disposition to produce new ^{upright} shoots from low down on the trunk. While there is no difference between ^{the forms} tree and shrub, there is still a broad distinction which is so useful that it must be maintained.
- *Rhamnus ilicifolia*. Fruit a very beautiful bright crimson color.
- *Prunus subcordata*, 4 to 8 ft. h.

Brough Cave to Garfield Forest

Cont. from p. 13.

- *Jarvisia fremontii*
- *Torreya californica*, rather frequent. (Probably occurs in every cañon, wooded and watered, in the Sierra Nevada. Similarly to this one,
- *Staphylea bolanderi*, up to 12 ft. h. Individual at "Big Spring" grows front to my classification of, as rather categories of, trees and shrubs. This individual is in one sense a "tree" because it is 20 feet high (!) and 1 in. in diameter at 2 feet above the ground and only a little in excess of that diameter at the ground. It grows

Aug. 13, 1911.

under Nuttall Willow (*Salix flavescens*) 30 ft. h. and trunk diam. 6-8 inches at butt. - See p. 12.

-
- *Asarum hartwegii* occurs commonly in the Black Oak.
 - Thimble Berry*, common in the Black Oak area.
- * = *Rubus parviflorus*

Garfield Forest, 5500 ft

- The Garfield Forest is the South
Kaweah Forest of my Silva
Big Tree map. It occupies the
north slope of the Dennison
Ridge, and extends well down
into the South Fork Kaweah
cañon according to Charlie
Blossom, Park Ranger.

Aug. 13, 1911.

Fire Protected Trunks

- *Sequoia gigantea* has the best
fire-protected trunk of any tree.
The bark is very hard to burn
and is ^{as} well-nigh ^{non-}inflammable
as a coniferous bark could
well be. The forest is here
still after 50 years of non-
protection, a period when
destructive civilization did
its worst against the forest.
Think of it! Fires were set
at will and run till they died
out or the winter rains
put them out. And the
Sequoias and the pines sur-
vived 50 years of American
treatment like that. The
sheep helped, too, to prevent

Garfield Forest

- Tulare Co. -

5500 ft.

very destructive fires and the
cattle likewise for both make
trails which ground fires
^{may}
not cross.

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No. 4658. *Gayophytum* ^{T. & G.} *diffusum*
Its flowers at once indicated
something different from the
Yosemite, no. , thing I
have seen. They are larger,
pure white, as also the
petals stamens and style, the
latter dilated toward the
truncate tip which truncation
is alone stigmatic. Petals
rhomboidal but a little
larger towards base which
has two obovate yellow
glands, these fusing more
or less below. - Garfield
Forest. - The flowers dry pink!

Garfield Forest, 6500 ft.
Inlars Co.

- No. 4659. *Pentstemon bridgesii* ^{Gray}
Three lobes lower lip narrow-
oblong, spreading down; upper
lip continued in line of
tube, notched. Dull whitish
markings at entrance throat
(base lobes) of lower lip.
Fls. all glabrous, the
sterile one inserted low
down. - Garfield Forest.

- No. 4660. *Habenaria* ^{dilatata var.} *leucostachya* ^{Nutt.}
Fls. white. Lateral sepals ^{Nutt.}
spreading laterally. Upper sepals
erect and broader, with ^{Ped.}
the 2 (upper) petals forming
a hood. Lip protruding.
Also a "green form" ? = past

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- flowering, the upper sepal
accrescent. - Garfield Forest
No. 4660a. *Habenaria sparsiflora* ^{with 4660.} *Nutt.*
No. 4661. *Allium solidum* *Nutt.*
Perianth pink purple, its
segments slightly united
at base. Summit of pedicels
dilated. Stamens with
awl-shaped filaments which
at the dilated bases are united!!
Per. segments scarcely united
except as being adnate to
stamen circle. Style narrowly
clavate. Crests of ovary low,
rounded. Per. segments
oblong-lanceolate, the inner
a little narrower - Garfield
Forest.

Garfield Forest, 6500 ft.
(S. Kaurah).

No. 4662. *Hulsea*
Rays 11, 11, 13.

No. 4663. *Aconitum columbianum* Nutt.

No. 4664. *Arctostaphylos patula*
Greene. 2 yrs. leaves on branches.

- Camped tonight on the Den-
ison Ridge, north slope, among
the *Sequoia gigantea*, in one
of the minor cañons which
make up Redwood Cañon.

No. 4665. *Ceanothus cordulatus* Nutt.
Hall. Charley Blossum calls it
Sunbrush.

No. 4666. *Lonicera involucrata* Benth.
Black fruit. 2 to 3 1/2 ft. h.

No. 4667. *Sequoia gigantea* Nutt.
(*Sequoia* (Rend.) Buchh.)
from young tree.

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- *Sequoia gigantea* in the Garfield
Forest - pleases me more than
any other grove I have seen.

[The trees are very numerous,
2500 of them, maybe twice
that number, more probably
5000 or over - later note - but
it's difficult to say. They will
easily average 2, perhaps 3 or 4
to the acre in their territory.

In some small spots there are
hundreds.] I love to see the fine
young ones, young in the sense
that their trunks have not
filled out, young in the
sense that they are in the
early flush of very young
manhood, slender as Redwoods
and without a limb for 150 to

Garfield Forest, 6500 ft.

200 feet and ^{225 to} 250 ft. high without a flaw! There are some old trees, fine old trees, with the top dead and the trunk swollen all the way up into the crown, but not many of these, at least relatively. From away down the cañon, I think it was below Cloughs Car, I could see them standing tall and free on a mountain wall, high up, their free trunks shining in the sun. This is the only grove I have thus seen from afar. The grove or rather forest is in a northwesterly hollow, part of which faces west, a high rocky scraggy ridge or crest sur-

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rounding it. Most picturesque setting. The trees run straight up the steep east slope of Putnam's Cañon (where we first meet them). They are all on view! And they pass over into the next (Redwood) cañon, and the next, all these cañons facing north from Dennison Mt. and Dennison Ridge.

It is ~~at~~ the first cañon after Putnam's (after passing over the first lateral spur or ridge which the Big Trees ascend and crown, that one comes down into a cañon (Redwood Cañon) full of them. At one place in the bottom of a little cañon of this main

Garfield Forest, 6500 ft.
(S. Kaweah)

cañon, the first little cañon one comes to I think, the bottom has been swept clean by avalanches, making an irregular but broad avenue up the cañon, up which one can look. The Sequoias are disposed at the head of this in dumps of 2 or more or singly. Their trunks are slender and tall. It is like a glorious decorated park. My pack-mule was ahead and a-going, altho I could scarcely drive him yesterday and I must needs hurry on lest I lose time. at the first convenient place on a fine open

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slope near a stream which gave high music I made camp, got dinner (I had neglected to eat my lunch), and then went back to see my beautiful cañon. The camp was in a high open place with a hill ^{a little} above it which was mostly open and flattish for this country. There were Sequoias all the way back, as beautiful as those of the beautiful cañon, but none disposed so wonderfully. The descending sun illuminated their trunks and they shone a warm red-brown flesh tone! In one close group, the trunks

Garfield Forest, 6500 ft.

run up without limb or
 flared to the green crowns,
 above the green crowns were the
 lightning dismantled tops
 like the rakish masts and yards
 of a ship. What a contrast
 between the perfection so
 near the earth and the dis-
 mantled top raised on high.

The sun shone on them a long
 time as I looked up that leafy
 lane gauded on either hand
 by the shining Sequoia trunks.
 I lingered and looked, when
 I stood was twilight but
 the sun still glorified them
 at the head of that lovely
 cañon. Everywhere I note the
 beauty of the trunks as the

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sun strikes them. And they need
 sun for the optimum of the
 climatic conditions which is
 just the reverse of the Redwood
 which thrives best under fog.

Another marked feature of
 this forest is that every age
 of Big Tree is represented
 with its normal quota. No
 age is deficient or lacking.
 There are young seedlings. There
 are heirs of arborescens garden
 type, there are also lusty young
 giants 80-100 feet high which
 scarcely show adult bark on
 their trunks. This type is rare
 northward. And then hangerbees
 of every age and smaller heirs
 likewise down to seedlings.

Garfield Forest, 6500 ft.

There is here a more perfect age series than I have seen elsewhere, that is as a regular and normal part of the forest.

- I notice a Big Tree overthrown. When its trunk came down, it not only smashed crosswise at intervals but certain portions were shattered into small block-like pieces 2 to 3 feet long. This would not happen so in case of Redwood which would splinter freely.

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- *Dryopteris* *systyla*, in fl.
- *Cornus nuttallii*
- There is a great amount of Black Oak (*Quercus kelloggii*) in the Garfield Forest, particularly in Putnam's Cañon and Redwood Cañon.
- A little beyond my camp in Redwood Cañon is a little flat where there are some fine large Big Trees. The flat is really a gently sloping swale of about 2 acres. One tree was 46 ft. circ. at 6 ft.

Garfield Forest 6500 ft
South Fork Kaweah.

Chaparral of Big Trees near my
camp in Redwood Cañon

- *Amelanchier cordulata* in full
fruit and has lost all its leaves
by a (caterpillar?). Abundant
species.
- *Chimaphila*, *Castanopsis*
sempervirens. Abundant.
- *Prunus emarginata*. Abun-
dant.
- *Arctostaphylos patula* Greene.

August 14, 1911.

- About $\frac{1}{2}$ ^{Slide Cañon.} mile beyond camp I
came to a great open cañon
bottom like a flat narrow valley
but sloping sharply down
which has been avalanched
clear of trees. It is at a point
on trail where a wet spot has
been boarded over with Big Tree
plank. This ^{avalanched} area is on a far
grander scale than the one
so enthusiastically described
above and looks mostly down
on the trees from the trail.

The park-like effect is heightened
by the young pyramids of
fir and ^{of} sequoia which is
freely clumped and scattered
all over the slide. The ^{sequoia} trees
on the margin of this open

Garfield Forest, 7000 ft.

have an woody avenue stand without admixture of other species but they merge, backwards, into the general forest. The Sequoias in the margin of this long narrow open stand one here, one there, or 2 or 3 together, - I am now, at this moment of writing - at the upper limit of *Sequoia gigantea*, in the swale. On the ridge they run a little (200 ft.) higher. A somewhat definite chaparral band margins *Sequoia gigantea* above; on the upper side the chaparral is the upper forest. The chaparral here is chiefly Snow

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Brush (*Ceanothus cordulatus*) and Chingnapin (*Castanopsis sempervirens*). On the open slopes where Snow Brush has lost all its leaves one is tremendously impressed by its spiniess!!! I did not notice denudation by cut-worm grubs* in shady areas, in forest or on slopes so sharp as to be protected from sun's rays. The upper forest is white & red firs.

* *Eugonia californica*. Cf. Grinnell, Bull. S. Cal. Acad. Sci. vol. 12, p. 14 (1913).

Tulare Co.

Garfield Forest 7000 ft
Sequoia Park

No. 4668. (not used)

No. 4669. ^{= *S. ranunculacea*} *Sidalcea reptans* Greene,
var. *ranunculacea* Jepson.No. 4670. *Sambucus*
6-8 ft. h. Clusters of flowers
twice as broad as in spec.
taken.No. 4671. *Ribes nevadense* Kell.
Glaucous bluish brony when
ripe. Bush 3 ft. h.

Aug. 14, 1911.

Big Trees

- My estimate of number of trees
in South Kaweah Forest was
6000 in Silva, p. 143. This is
very conservative. Considering
that according to Blossum
the trees go well down towards
the entire bottom I should
say 8000 or 9000 would be
nearer the mark counting only
red-barked trees.

Sequoia Park.

Sand Meadow, 8500 ft.
South Fork Kaweah River.

- No. 4672. *Lotus* ^{= *L. cupreus* Greene} *oblongifolius* Greene
var. *cupreus* ^{Ottley}.
Banner yellow, veined with
red-brown, orbicular, auricled at
base of blade on each side.
Lungs white, oblong, keel of one
piece, dull yellow-white. Lungs
and keel twisted from left to
right as one faces banner. Gen-
erally 2 fls. to a pedicel, or the
upper pedicel with one -
On the rocky hill between
Sand Meadow and South Fork
Kaweah crossing, but in
a spot of good soil.

- No. 4673. *Astragalus bolanderi*
Near Sand Meadow, ^{Gray.}

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- No. 4674. *Minulus* ^{*whitneyi* Gray} ~~*nephriticus* Greene~~
Very pretty and abundant.
Dwarf yellow *Minulus* of
granite sand. Exclamation
point* in deep rich purple
running out from throat to
each lobe's base and a blotch
of same color on each side
between upper and lower lip
at sinus. Same as no.

of Yosemite Park coll. Near
South Fork Kaweah crossing
cont. See p. 44. * form of marking.

- No. 4675. *Comp.* (*McGee*) *Wheeleri*
Hemizonia ally. (*Hemizonia*
Wheeleri)
Near Sand Mdw. Rays 6-8 or
more.

- No. 4676. ^{= *Ivesia*} *Potentilla campestris* ^{Jepson}
Petals pale lemon yellow, ^{on}

Hockett Mdw.

Tulare Co.

8500 ft.

rhomboid or obovate, narrowed to a very slender claw. Petals 5 or 4! Stamens in the 5-merous flower = 17, 18, only counts made. Petals spreading far out from calyx. Very abundant near Sand and Hockett Meadows.

No. 4677. *Arenaria congesta* var. ^{suffrutescens} Rocky flat near Sand Mdw

No. 4678. *Pedicularis attollens* Gray, with preced. See p. 49.

- Stopped last night with Park Ranger Charley Blusson, cabin at Hockett Mdw., whom I met at Broder's Cabin on the South Fork ten years ago. Also the Miller "boys" were there, Hermann and Clinton. They gave me a fine welcome and a good time.

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- No. 4679. *Gentian serrata* var. ^{holopetala} Blue corolla, obscure teeth in sinuses. Filaments strongly dilated downward. - Hockett Meadow
- *Potentilla santolinoides* - More Tail *Potentilla*, white flo., on sand mound in Sand Mdw.
- *Vaccinium caespitosum* Michx. See no. 14, 690. Hockett Mdw.
- No. 4680. *Castilleja*. Hockett Mdw.

^{Evesia} *lycopodioides* ssp. *megalopetala*

No. 4681. *Potentilla gordonii* Greene var. *megalopetala* ^{Jepson} Petals obovate, obtuse. Stamens 5. Petals not spreading from calyx so as to stand out distinct as in #4676; the claw short. Claw long in #4676.

Hockett Meadow,
Tulare Co. 8500 ft.

No. 4682. *Senecio* aff. *scorzonella* Greene

No. 4683. *Gayophytum* ^(T. & G.) *caesium*
Near Sand Mdw. in Tamarac Pine
forest. Petals and ^{open} stamens
white. Flowers very small.
Plants very strict. - Common
(also on N. F. K. Middle Tule.).

No. 4684. *Solidago*
Hockett Mdw.

No. 4685. *Silene occidentalis* Nutt.
Petals 2-cleft, sometimes
with a lateral notch or
apical notch to the lobes.
Crests consisting of two
equal oblong lobes - Rocky
low hill near Sand Mdw.

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✓ No. 4686. *Minimus* ^{Whitneyi Gray} ~~nanus A. N. S.~~
Dwarf red *minimus*. Corolla
sometimes of greater length
than rest of plant. Yellowish
in throat with indistinct border
of white and margin of violet-
purple running clear around
throat and heaviest on upper side,
especially rich between upper
and lower lips at each sinus.
Lobes transversely oblong, not
obviously unequal but the
2-lipped character evident
from general ^{and esp. throat} structure and
position. Notice that the
large plants have smaller
corollas!!! Lobes slightly
overlapping.

Kaweah River

South Fork Crossing
8200 ft

Cont.

[No. 4674. *Minulus* ^{det. A. S. G.} *nephiticus* ^{var.}
See p. 39. Dwarf Yellow

Minulus in millions. Configuration of corolla like preceding, ^{but} the lobes not quite so broad and the sinuses open, especially on lower side corolla. In no. 4686 sinuses closed by overlapping lobes.

Exclamation points * brown purple or violet-purple running from throat to base of each lobe, stronger on lower lip; also a violet-purple blotch in throat below each sinus between upper and lower lip. Notice the larger plants have * form of markings.

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smaller corollas. - Near S. Fork crossing.

No. 4687. *Stellaria jamesii* Torr.
Petals white, obovate, deeply emarginate at apex. Stamens 10. Styles 3, distinct. - Near S. Fork Crossing.

- When I left Blossom Cabin at Hockett Meadows this morning I doubled back on my trail to the S. Fork Kaweah, crossed it and struck off in a westerly direction in order to catch a trail running into Middle Tule across the ridge.

Middle Tule Riv., N.
9000-8500 ft.

No. 4688. Umbellifer.

Headwaters N. Fk. Mid. Tule
Cymopterus terebinthinus Fr. & G.

No. 4689. Composite = *Hazardia* ^{*whitneyi* Greene.}

Open hillslope. Root 2 or 3 in.
thick and harder than any
root I can remember. Bot-
anical pick made no
impression on it. Very
difficult to cut with a
knife.

No. 4690. *Holodiscus microphyllus* ^{Kydt.}

In rocks at the grand
view point over the North-
fork basin. Stamens 20!!
Petals elliptical. Stamens
inserted beneath an annular
yellow disk.

Fork, Aug. 15, 1911.

- When I left the Kaweah
Country and passed the divide
I came down a ridge down
the waters of the N. Fork Tule
from those of the N. Fk. Middle
Tule. This ridge gives a fine
outlook over the country since
it breaks off abruptly toward
Dillon Mill and is steep
towards the Middle Fork. Rattling
well up on this ridge I left
the trail and rode a few yards
out onto some promontory
rocks whence we had a
glorious view over the great
cañon valley of the N. Fk.
Tule with Battle Mt. set in
the middle of it, Dennison
Mt. skidged to near right,

Mid. Tule River, N. F.K.
Tulare Co. 8500 ft.

South foreground Moses Mt. - a very conspicuous and fine landmark from here - and N. F.K., Mid. Tule - its canon valley - Maggie Mt. to east, and the yellow foot-hills and San Joaquin Valley, in the distant west, from which one's eyes roamed back to the succession of blue ridges in the south.

Right near me the Red Firs lifted their tops to a level or a little above the level of my eyes. And their top were heavily loaded with cones, actually toppling over the limbs and bending them down at the ends, in very

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top of tree, of course. It was a great sight.

- Pedicularis, no. 4698.

ground Pedicularis with the fern-like leaves all over the dry forest floor of the S. F.K.

Kaweah and Tule. Often the only herb all through the higher ridges. Near Mt. Moses.
 S. F.K. Kaweah.

- No. 4691. Composite.

Common all through the higher ridges. Also in S. F.K. Kaweah. Stems always several from a stout hard tap root, the crown of which bears the dead bases of stems of previous years. ^{flowering}

Mid. Tule River, N. Fork of.
Camp at 7500 ft. Tulare Co.

- No. 4692. *Minimus* *Tilingi* Regel, var. *corallinus* (Greene) Gray. det. n. s. g.
Mud *Minimus*, very full
palate with prominent ridges;
middle lobe lower lip twice
size lateral lobes and notched.
Upper lip, lobes turned back-
ward. Palate hairy, brown-
dotted. — In marshy mountain
slope spring near cañon bottom.

- No. 4693. *Helenium* *Bigelovii* Gray.
With preced. See p. 53.

- No. 4694. *Composite*. *Senecio fremontii* var. *occidentalis* Gray

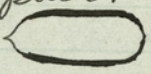
The specimen with narrow
leaves collected on the
ridge coming down into mid.
flk. cañon, the other are amongst
loose rock in the cañon bottom.

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Camped tonight at the junction
of the first streams (upper waters)
which make the N. Fork of
the Middle Tule River. The
sun set at about 4:30 on acct.
of the high walls to the narrow
cañon. Below this are a series
of sloping cañon bottom
meadows locally known as
"Long Meadow".

- No. 4695. *Gayophytum* *ramosissimum* T. & G. white, the
Filaments small. Petals, yellow
at base scarcely obvious.
Ovary with very short dense
spreading hairs; hairs spreading
straight out! but short;
filaments apparently dilated
upwards. Petals and stamens

Mid. Tule River, N. F. K. of
7500 ft.

Buds drying dark red!
white. (Petals drying pink!)
Petals truly oblong 
but quite broad. Pods sessile, linear.
No. 4696. *Allophyllum integrifolium* (Brand) A. N. S. Grant
~~*Gilia gilvipes* Bth.~~

No. 4697. *Gayophytum diffusum* ^{T. & G.}
Flowers large, petals and
stamens white, the latter
dilated upwards. Petals
elliptic, i.e. with rounded
ends, not squarish as in
no. 4695; ovary with short
closely appressed hairs;
petals with the yellow at
very base evident; pedicels
in flower stage at angle
with stem (more so than in
#4695?). Pods pedicelled,
clavellate.

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- Homer's nose can be seen from the
San Joaquin plains. It is a great
and truly distinctive landmark.
It is dome structure. Dome
structure juts out of the Dominion
ridge just above Dillon mill,
and particularly on the east
wall of this Tule cañon I am
now in and about 1 mile
below camp.
^{T. my}

- *Helenium Bigelovii*, no. 4693
abundant and beautiful,
all the way down the cañon.

Mid. Tule River, N. Fk. of.

Big Trees.

- *Sequoia gigantea*. About 30 been opposite Mt. Moses + Maggie Mt., in bottom of this cañon, just below little dome on near east wall of cañon.

Trees in a close cluster, 4 or 5 acres. Reproduction strong for the number of trees. Young trees 20 feet h., especially in stream bed. The adult trees are 3 to 10 ft. diam at 5 ft.

- About 1 mile below this first grove and opposite what now appears to be the highest point of Mt. Moses begins another grove. The forest is very open. Reproduction good, about as good

Aug. 16, 1911.

as associated species, namely White Fir. Very little *Pinus ponderosa* and *Lambertiana*.

I now leave the cañon bottom and via "upper trail" work out on west wall of cañon and finally come to a flat opposite a gap in the range where there are Big Trees again, larger ones than any seen so far on Tule River. (One tree 16 feet diam. at 6 ft. - estimated)

This flat is at 6600 ft. altitude and of about the same alt. as the point where I left the stream in the cañon bottom.

Mid. Tule River, N. Fk of
6600 ft.

No. 4698. *Ribes cereum* Dougl.
Red fruit. Spreading shrub
5 ft. h. Mid. Tule River.

No. 4699. *Epilobium angustifolium*
L. In chaparral. Mid. Tule River

— *Prunus emarginata* and
Ceanothus cordulatus,
great quantities of this
in cañon at and below my
last night's camp. No Bush
Chinquapin here. These
first two sp. run lower than
it. Observation in cañon
bottom.

No. 4700. *Prunus emarginata* ^{Walt.}
This taken after leaving
cañon bottom.

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Big Trees

Sequoia gigantea can no longer
be considered a remnant.
Reprod. as strong as any of
associated species except
White Fir.

In the second grove as
outlined on my map (See Trees
Cal. file), my eye saw per-
haps 500 trees, 750 would
not be a bad guess for the
number I think. There might
be 1000 or 1500 but perhaps
not. The cañon is a deep
and narrow one, the sun
set on me at 4:30 at camp.

Enterprise Mill,

- I leave the flat described on p. 55 and travel west on an old wagon road, pass over the low gap toward which I had been heading up the cañon wall, and ^{in trailing} ~~some~~ come to the Enterprise mill where some time since Big Trees were logged on a considerable scale. The old mill presents a scene of desolation and all about it. Old ruinous buildings and "dead horse" of all sort. I keep on traveling westerly. The logging was irregular. Many fine trees are left near the mill and even further away, in

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the middle of logged spots. So far as I can see in my hasty going through the country the logging has not made any serious impression on the total number of trees. I am now in the heart of a large-sized Sequoia forest on the waters of the North Tule, having left the waters of the ^{N. Pk.} Mid. Tule. The forest ^{obviously} extends north and south some distance even to my eye from this point. Some exceedingly fine trees, fine for the camera, stand isolated. There are countless numbers of Sequoia trees, at least countless in the sense

Happy Camp Mdw to N. Flk. Tule
6000 ft.

that it is impracticable for me to count them. Men in the woods are making fence posts by hand out of big Tree logs just as they do out of Redwood in the Coast Ranges.

Trail Directions

About 1/4 mile below "Mountain Home" road goes through a rocky reef. Take ² right-hand trail over a gap into a little (Brownie) meadow, then turn to right after meadow and follow trail to next meadow = Happy Camp Mdw., then go out n. end. meadow (road) and follow to top of a ridge and turn westerly, keeping

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to main right hand trails.

No. 4701. *Ribes auriculatum* Greene
Ridge near Happy Camp mdw.
Fruit bright pink, becoming a deep red brown when dead ripe. = *R. rozellii* Regel. !!

viscida Parry

No. 4702. *Arctostaphylos*,
Leaves smaller than usual.
N. Flk. Tule River, ^{slope} opposite
Battle Mt. at ~~4500~~ alt.
Tulare Co.

- All the people in the region speak of "Dillon Wood" not "Dillon Mill".

- Cedar. I understood Wells to say "Cedar" ("that big Cedar") when speaking of *Sequoia gigantea*.

N. H. Tule River

- Near the Enterprise Mill were some very fine Sequoias (see p. 58). This region is one resorted to by campers. Along the road the finest trees had been decorated with names on signs put high on the trunk. These were evidently the work of rustic swains: Hazel, Laura, Minnie and so on at great length. But opposite "Minnie" there was also "Bill".

- I met at Happy Camp Meadows a young fellow by name of Wells. He said: "Sequoias go all way south to Hot Springs with a stop at

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Nelson's, begin again on Slaty Mt. and Black Mt.; north nearly to Dillonwood." I should doubt Sequoias on west slope Moses Mt. The slope is very abrupt and rocky and exposed to the sun at hottest time of day. There might be some deep cañons lower down that would protect them.

I left the last Sequoias at Happy Camp Meadow.

I skinned inside that "sore trees", Silva Cal., was a conservative estimate for the "Middle Park Tule River forest."

N. F/K. Tule River

- I go on down a ridge running westerly (see last line, p. 60). The forest is mainly white Fir and Incense Cedar & Black Oak. When I get below Black Oak the chaparral comes straight up to top of ridge from the south but stops at top of ridge as if it were cut off. This dense heavy* brush is *Ceanothus cuneatus*, *Arctostaphylos glauca**, *Cercocarpus parvifolius*. But on the north slope there is Black Oak in a fairly open stand.

* * Undoubtedly no. 4702 (*A. viscida*).

* About 6 to 8 ft. h. as I remember.

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- On a little point of a hill on the north slope described on previous page the Black Oaks were scattered over a beautiful sward and made a beautiful park-like effect as if on a lawn. But the "lawn" was the even growth of Mountain Malogamy. Of course this ^{tule} was not close at hand. I looked from the ridge back at this little point distant 200 yards or a trifle more.

N. Fk. Tule River

- I go on down the ridge in the chaparral now, 4500 to 4000 ft. The chaparral averaged twice the height of my ² head, some of it higher.

Bercocarpus parvifolius

Ceanothus cuneatus Nutt.

Ceanothus integerrimus H. & A.

and so on down to 3300 feet, the brush dense and high.

- Finally I got down on to the broad cañon floor of the N. Fk. I could see nothing on account of the dense growth (see p. 70) filling the broad rocky uneven bottom. I wandered down a road and

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then returned to a point where opposite I thought I had seen a house from higher up. It was now near dusk. The horse ^{had} twice scented a cross trail which he wanted to follow and which I had not noticed. I took the animals into it now but we got stuck in the dense brush and I went on, on foot. Found another road and finally a house with a pleasant corn patch green and smiling, but the men was inhospitable. I feared now that I would not in the dark again find my animals but after reaching the little gully

Childers Ranch,
North Fork Tule River, alt 2600 ft.

we had crossed in starting
into the brush I realized
that I had passed them.
So, by working back and
listening for the mule
bell, - the mule was not
tied - I found them,
worked out and went
again down the wagon
trail to an abandoned
house which I had passed
in the way down and back.
Camped there for the night.
Found water ^{beginning of Aug. 16,} in a gully; it
smelt all right and looked
all right under a lit match,
and so I quenched my
dreadful thirst, for it did
not taste bad. But in the

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morning I saw it was full
of wigglers.

In the morning went on
down the wagon trail and found
the Childers place. The family
was most hospitable, gave
me two kinds of melons, helped
me to doctor Charley's sore
toe which is cut on a rock,
and gave me directions for
finding the Forest Service
trail to Three Rivers.

Follow the telephone trail
to Cramer Creek, the last gulch
before trail starts up the
mountain side, there leave
telephone line and keep to
trail which follows open
mountain side. When you

N. F. K. Tule River near Nilo,
2600 ft. alt.

get to summit - you meet
telephorine again. Keep
westerly on ridge and then
drop down into Grouse Valley
to Delbert Dillon's ^{upper} place.

— Richard Childers, Nilo, CO.

The North Canyon Bottom.

One and one-half to 2 or 3
miles wide, rocky, uneven,
but as a whole level, altho
sloping downward. It is
entirely covered with a
dense ^{woody} growth and one
can nowhere or rarely
see where he is. First of
all is the great *Quercus*
chrysolepis forest 30 to
50 feet high, the bums

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4 to 15 in. at butt. I say "great"
not referring to the individual
trees but to the extent and
density and purity of the
stand. I have seen nothing
quite like it elsewhere.

Sometimes with stems
branching from a common
base 3-4 ft. through.

The other species are:

Neoculus californica

Cercis occidentalis

Arctostaphylos ^{= viscidula !! not} *glauca*

Fremontia californica Torr.

Cercocarpus parvifolius

Ceanothus cuneatus

Rhamnus ilicifolia

Quercus wislizenii var
brutescens.

Platanus racemosa

N. F. K. Tule River,
near mile.

along streams

Alnus rhombifolia along
streams

evening of Aug. 17,

- Camped tonight at Cold Spring, a delightful spring in that Blue Oak country, & near foot of trail up through chaparral.

^{think} - Blue Oak ^{tree} with very narrow ridges. Presented a singular sight. The ridges were very narrow, very straight up and down, and very close together. On west side of trail, distant about 75 yards from it, and about $\frac{1}{2}$ mile short of Cold Spring going up the mountain from the N. F. K. crossing.

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- *Prunus subcordata*, "does not get ripe here" says Mrs.

Childers "The blossoms blight. It fruits near Fresno."

- "You must be paid a very fine salary to go about and do such very hard work as that" said Farmer Childers, after he had looked at my pack outfit and botanical equipment and learned where I had been. "No," said I to his surprise, "I am not paid anything for doing this. It's the way I put in my vacation. I'd rather do this botanical field work in summer than anything else I know. It's a very great pleasure to me and of very great interest."

Gold Spring (N.H.K. Tule)

4000 ft.

- Incense Cedar scattered through the Black Oak stand at Cold Spring, only a little of it but still attracting the attention.
- Trail to Summit through chaparral. Here I had a mean advantage of the pack mule. The brush was very dense and after I got the mule on it he had no choice but to be driven up it. He has been bucking the trail badly and causing a great deal of trouble. Here I ~~bliss~~ dense chaparral!

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Stump-sprouting of Chaparral.

- *Bercocarpus parvifolius*, very vigorous. *
- *Plectostaphylos* "glauca" = *viscida*
- *Rhamnus ilicifolia* #4702!!
- *Fremontia californica*
- *Rhamnus tomentella*
- *Ceanothus integerrimus*
- *Aesculus californica*
- *Prunus subcordata*
- *Rhus trilobata* Nutt.
- *Cercis occidentalis*
- *Ceanothus cuneatus*.
- *Chamaebatia foliolosa* (?)

* Hard Tack is a tall thing but usually clumpy, - just over grass, so to speak. In any event these sp. s. tall occur as chaparral and chaparral is a brush formation.

Grouse Valley, Tulare Co.
Alt. 3700 ft.

- *Prunus subcordata*, thicket of it, 10 ft. h., fruit on it in plenty but blasted half-grown. - Grouse Valley.
- *Ceanothus integrifolius*, a "tree" 16 ft. h. but a half-dozen stems in clump.
- The chaparral about Cold Spring and Grouse Valley is certainly dense. It is also often high. Going down Grouse Creek it is always over my head, sometimes twice as high. Right before me is a *Cercocarpus parvifolius* tree 28 ft. h!, slender and with curving trunk up to about 12 ft. h.

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Grouse Creek.

The species forming the general cover (which is as a whole chaparral) here are:

- *Cercocarpus parvifolius**
- *Ceanothus cuneatus*
- *Aesculus californica*
- *Quercus wislizeni*
- *Rhamnus ilicifolia*

Shrub Sprouting

Fraxinus californica and *Cercis occidentalis* stump-sprout vigorously. *Ceanothus cuneatus* weak or none in old age. *Fraxinus dipetala*, stump-sprouts freely.

* Bark dark almost black on main trunk, checked into small square plates.

Three Rivers

- *Lesqueris cuneatus*; I showed a piece to Ernest Britten; He says: The local name for that is chaparral brush. When you say: Go up on that hill and pass to the right of a bunch of chaparral, everybody here knows that that kind of brush is meant. It is a mean brush to travel through, though it hasn't any thorns like other brush. The points are hard, they're lots of them and they take hold of your saddle and leathers and wear them out. Lots of times when driving cattle you have to

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plunge right through this brush and the tops of it often come about as high as the saddle. It's mean brush to work with when clearing land. Its branches bend over and the small points catch you and interfere. In wet weather you can take a couple of stout horses and pull a clump right out. A piece of land can be cleared in a hurry in that way. It has no tap-root. The long roots run out laterally but if one holds, it shows when the horses drag the clump over and you can take an axe and chop it through.

Three Rivers

and release the clump.

Other scrub (like *Manzanita**) has a tap root. You can also clear a hillside by killing off the brush, any of it, by ^{putting} water on it. It will kill it right off. Our white oaks are being killed off by too much irrigation water.

Sequoias at Visalia

- Tree 45 years old on the place of Hermann Miller. The two trees east of Visalia are on the John Harter place. They are 55 years old.

* ?

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- *Cercis occidentalis*. Mr. Noel Britten says: Red Bud has very long slender roots; 20-30 feet long I have seen them, where an irrigating ditch has laid bare the root system. It's wonderful how slender they are, 1 to 2 inches at butt and tapering gradually down. They are very tough and can be used in basketry.
- *Prunus emarginata* twigs have been used in basketry by white people at Kaweah.

Grouse Valley, ^{Tulare Co.}

No. 4703. *Quercus garryana* ^{Doughl.}
var. *breweri*. ^{Jeps} Cold Spring, N.
Fk. Tule, on Three Rivers Trail.

No. 4704. *Arctostaphylos* ^{*maritima* *merriamii*} ~~*pastille*~~
^{*rosa Jeps.*}
Cold Spring, ^{to upper}
Valley. N. Fk. Tule River.

No. 4705. *Fremontia californica* ^{Torr.}
Summit of trail from Cold
Spring to upper Grouse Val.

No. 4706. *Corethrogyne filaginifolia* (N. & A.) Nutt.
^{upper} ~~*glomerata*~~ ^{Nutt.}
Mountain side, upper Grouse
Valley

No. 4707. *Eriogonum* ^{*roseum*} ~~*virgatum*~~
Mountain side, upper
Grouse Valley.

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No. 4708. Composite
Upper Grouse Valley.

No. 4709. *Holocarpha heermanni* (Greene) ^{Koch}
~~Composite~~
Upper Grouse Valley.

No. 4710. *Ceanothus cuneatus* ^{Nutt.}
Stump-sprouts. Trail
from Cold Spring to Grouse
Valley.

No. 4711. *Clarkia viminea* ^{D. H.}
~~*Godetia williamsii*~~
Upper Grouse Valley. [There is
a story connected with
this plant. The pack mule
would not follow the
riding horse, would not lead
and could only with diffi-
culty be driven uphill.

Grouse Valley, Inlare Co.

"Poullice" would go pretty well if the hill were steep enough to center all his attention on getting up the hill and leave no leisure for bucking the trail. But Poullice was difficult to drive down hill and at times impossible. So going down into the ^{canyon} of Middle Tule from Hockett when I was finally forced to turn Charley, the riding horse, "in on the trail" and then the mule would follow him, whilst I came behind walking. The next day, going down the narrow canyon of the Middle Tule I thought I had Poullice

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cornered and could force him to travel ahead. But Poullice was very cunning and on brushy ground or turns would make desperate attempts to strike the back trail and would sometimes succeed leading me a chase. On one occasion I rode Charley off the trail into rocky brush country in pursuit. This was a foolish thing to do for Charley could not see the rocks on account of the dense brush and so hurt his toe (an old sore on it-) and made him go lame the rest of the trip. A horse should never be

Grouse Valley, Inland Co.

hidden off the trail, at least under such circumstances. A man should dismount, for he can always easily distance a ^{loaded} mule in brush. Two days after this I was as usual driving the animal. An added disadvantage to not riding was the fact that Charley traveled rapidly on the trail and left me too far behind when I stopped to botanize, there being no convenient way of heading him. When I came to the plant taken as 4709 I debated whether I should take it. But I did not want to lose it, so I hastily took it and

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put it in and started on. To my dismay, in a hundred yards, the trail forked and the ground was hard and I could not see footprints. I started off instantly on one of the trails at top speed and while running in this way stepped on a coiled live rattler in the trail. The moment I struck him I heard the rattle and my body by instant reflex action sprang and I jumped clear of him 9 or 10 feet. As I flew I looked over my shoulder and he was certainly the maddest rattler I ever saw, his head darting fury and his tail shaking with a noise like a

Grouse Valley, Tulare Co.

mowing machine. I went straight ^{on, running} at full speed, and after a few moments heard the mule bell on the other trail and went across country and stopped ^{* see p. 89.} them. If my brain had acted quickly enough I should have taken the upper trail, for Charley invariably took the upper trail at forks.

[When I got down to about 6000 feet on the Middle Fork Tule where people from the hot San Joaquin were camping in the Big Trees, my bell was heard on the mountain side and women with children at their skirts and men would come to the trail, look at my riding horse, look at me and look at the pack mule I was driving before and say eagerly: "Been 'way back? Been 'way back?"]

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No. 4712. ^{= Eriastrum} *Gilia pluriflora* (Hel.)
Upper grouse valley,
Huzelia pluriflora Hel.

No. 4713 *Rhamnus crocea* ^{Nutt.} var.
ilicifolia (Greene) C.B. Wolf
Grouse valley.

No. 4714. *Firenuntia californica* Torr.
Grouse valley trail to Three
Rivers. Stump sprouts.

* from p. 88. They had, fortunately for me, stopped at a trail side spring to drink. Fortunately because there was several hundred thousand acres of mountain country in which it would have been difficult to find them in weeks.

Three Rivers, Tulare Co.

No. 4715a Grass ^{Bermuda} *Chloris virgata* Swartz.
(Det. Beecher Crampton 3/72)

Three Rivers, Britten Ranch.

Cult. fields, ^{No. 4715} *Eupriola dactylon*
(as det. B. Crampton, 3/72)
= *Cynodon dactylon* (L.) Pers.

No. 4716. Grass

with preced.

= *Digitaria* s.

Syntherisma sanguinalis (L.) Dulac

No. 4717. Grass. See vol. 22,

p. 164. with preced.

Echinochloa zelayensis (H.B.K.) Schult.

No. 4718. Grass, *Setaria glauca* (L.)
(DET. Beecher Crampton, 3/72) ^{P. Schult.}
with preced.

~~*Echinochloa glauca* (L.) Scribn.~~

No. 4719. *Potamogeton foliosus*
Ref. var. *macellus* Fern.

Irrigation ditch at

Three Rivers. Chokes ditch.

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- *Pinus*. The Miller boys told about pine trees brought from the Sierra and planted at Visalia. The trees die when getting near adult stage. See their address in back of book. Compare the experience at Stockton.

not *A. mariposa*.

No. 4720. *Arctostaphylos* ^{virens}
N.F.K. Tule. alt. 4400 ft. ^{Larry}

Above Cold Spring.

No. 4721. *Eschscholtzia cal.* Marked plant
along r.s. at Vacaville, Sept. 2, 1912.
follows: ranch of Dario Ranch. Spikes as

Post 6 =  Post 13 

Post 7 =  Post 17 

Post 8 =  Post 18 

Post 9 =   Post 18 

Post 10.  Post 20  

Berkeley

- *Acer macrophyllum*.

Ben Ward sends from Blythe-
dale Cañon, Marin Co., limb
barked longitudinally, strip
about 1 in. wide on a limb
1 1/4 in. diam. Not done by insects
or fungi so far as could be det.
Maybe wood-rats. Prof. Horn
says Redwoods at Sequel badly
barked and that people there
attribute it to wood-rats.
Nests of wood-rats very
abundant in trees there.

Brandt, Bot. 4, says his sister has
seen gray squirrel eating bark of
Acer macrophyllum near Humboldt
- Mendocino line.

Sanders says wood rats "will eat
almost anything".

Sept, 1911.

- Tule roots, used by the Indians to
make bread, the reeds for hamper,
baskets and mats, - Hittell, Adv. of
James Capen Adams, p. 119, 2d ed.
- Soap-root for tanning, l.s. p. 117.
- The Grizzly Bear, l.s. p. 17; compared
with the lion & tiger, 9, 10, 11.
- *Prunus ilicifolia*, kernels roasted
and made into a gruel, favorite
dish amongst the Indians, Teste
Hartung. Journ. Hart. Soc. 2, 188.
- Stillman, Dr. J. D. B. = no.
540 on List of Committee of
Vigilance? Look up in Publ.
Acad. Pac. Coast Hist. vol. 1.
There are a number of grasses
named after Stillman. See
Hitchcock in Fl. Cal. MSS.

Berkeley

- *Populus*, hybrid
Near Churchill on Carson River,
X betw. Cottonwood + Lombardy,
strip 35 miles long, $\frac{1}{2}$ -1 mile
wide. Cut into veneers, harder
wood than Cottonwood. -

Mrs. Kelly, Sept. 19, 1911

- *Rhododendron occidentale* -
bush in Big Basin ^{Santa Cruz Mts.,} which all
the fls. on one branch with
6 corolla-lobes and 6 stamens.
Other parts of shrub with
such fls. also and ^{also fls.} with
6-corolla lobes and 5
stamens. Showed me by
Mrs. Kelly ^{specimens} who coll. them.
(Mrs. Kelly, 2616 Virginia St.
Berkeley). Teratology.

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- Effect of snow. Mrs. Walter Kellogg says: "Heavy snows in spring are sometimes succeeded by freezing weather which makes a mass of ice on young fire sufficient to carry them down or shear off the branches on one side". She speaks of conditions in the Cal. Power Factory's holdings above Diamond Springs.

- *Trifolium involucreatum* ^{ort.} Salt
forms on the leaves so one can
see it in a spot. Cattle are
in consequence very fond of it and
follow up the little creeks along
the borders of which it grows in
wet places. Fls. pink. - Ralph
Hodgkin, (Bot. 12) re. spms. coll. by
himself in the Sierra Nevada near
Northfork, summer 1911. See p. 145 seq.

Monterey to Salinas
500 to 1000 ft.

- *Nicotiana glauca*.
Toro Creek bed, becoming common. Rapidly spreading in "wash" type of stream bed all over California.
- Tule bed found at 1200 ft. in well-boring at Salinas - Dr. Abbott.
- *Heterotheca grandiflora* - rather common in the lower Salinas valley.
- *Eriogonum nudum* - field full of it in Salinas Valley 2 mi. s.w. of Soledad.

Sept. 22, 1911

- No. 4721a *Salix lasiophylla*.
Seedlings making a dense stand in Toro Creek bottom, $\frac{1}{2}$ acre.
- No. 4722. *Verbesina encelioides* ^{var. vauriculata R. & G.}
Salinas river bottom, 3-4 ft. h. at Old Hilltown. 50 ft. alt.
- No. 4723. *Frauceria acanthioides*
Branching from or rather at base, the plants 2-3 ft. h. + as broad. Salinas R. bottom at Old Hilltown 50 ft. alt.
- No. 4724. *Helianthus annuus* L.
6 ft. h. Salinas R. bottom, at Old Hilltown. 50 ft. alt.
- No. 4725. *Loocoma arguta*.
Abundant 2 mi. s.w. Soledad.

Arroyo Seco

alt. 500 to 1000 ft.

Monterey Co.

- *Baccharis douglasii*
- *Platanus racemosa*, the main limbs as if white-washed
- *Aesculus californica*.
- *Alnus rhombifolia*.
- *Fraxinus dipetala*, trees up to 22 ft. h. Trunk 4 in. diam. Also shrubby or many-stemmed forms up to 20 ft. h.
- *Ceanothus cuneatus* Nutt. up to 12 ft. h. and forming very dense thickets. Used for picket fences with 2 woven wire strands at top. Lasts as long as Redwood. Called "Picket Bush".

Sept. 22, 1911

- *Rhamnus ilicifolia*, common in fr. Inner (yellow) bark used to make a dye. Dr. Abbott says brown color runs of Indians - so permanent is the coloring. Up to 11 ft. h. *
- *Prunus ilicifolia*. Abundant, drupes, a few of them just turning ^{deep red}, most of them ^{purplish} green. Bushes fruiting heavily.
- *Eremocarpus setigerus*.
- *Alnus divariloba*.
- *Pinus coulteri*, two trees in cañon bottom half-way to Abbott Ranch from mouth of cañon.
- *Quercus douglasii*, *agrifolia*, *lobata*.
- Species on this p. + preced. p. from near mouth cañon to Abbott Ranch, 900 ft.
- * Some bushes barren. Due to dioeciousness?

Abbott's Ranch, Arroyo
alt. 900 ft.

- *Adenostoma fasciculatum*
Occupies a broad band
on the east slope of the inner
range of the Santa Lucias
from Salinas south to Arroyo
Seco, a band or narrow
zone, barren or ^{chaparral or} oak-covered
at top, and similarly
barren at bottom. The band
occupies both ^{of the} local slopes
of the narrow deep cañons
or if the right hand slope
lies directly north it will
be replaced by chaparral.
The band becomes broader
southward to Arroyo Seco and
the Chamise more uniform
on both ^{local} slopes. As one comes
up the Arroyo Seco the

Seco, Sept. 23, 1911.

Chamise is still in great
colonies on the steep south
slopes. A general slope of this
sort may have a swale or
flat in it with the result
of low oak or chaparral
replacing chamise. One
example of this sort, on
northerly cañon wall, is
defined very sharply. Op-
posite Abbott's ranch, on north
wall, the very steep south slope
is lying to the south but on
n. side cañon, is colonized by
Artemisia californica sharply
replaced by Chamise at
top of the wall. It is very
interesting to look up cañon
and see a lateral ridge

Abbott's Ranch, Arroyo Seco
alt. 900 ft.

running down to cañon
bottom, the s.w. slope
wholly *Artemisia californica*
(or with a few scattered
clumps of dwarf Live Oak),
while at the very summit
of the spur there begins
Adenostoma fasciculatum
continuing down north slope.
Formations are very sharply
defined here in this cañon.

(No. 4726, Arroyo Seco, 1100 ft. alt. Sep. 112.)

- *Lespedeza filifolia* = Mule
Herd acc. ^{= *L. rigidus*} Mountaineer Abbott,
but does not know why it is called Mule
Herd. Stock do not eat it. Term of re-
search? - *Yucca whipplei* - on hill
above Ranger's Cabin, Santa Lucia
Ck. Mrs. Abbott says they flower
profusely after a fire has passed.

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- *Heteromeles arbutifolia*, 6 ft.
h.
- *Datura glomerata* ^{B. H. W.} stream
bed, at Ranger's Cabin, Santa
Lucia Creek. up to 6 ft. h.
No. 4727.
- *Cercocarpus parvifolius* -
stump-sprouts. This bush
now 5 ft. h. Primary leaves
very large. Trail ^{on ridge} above
Santa Lucia Creek, alt. circa
2000 ft.
- *Ceanothus sorediatus* *
stump-sprout bush 4 ft. h.
Very white! very thorny!
On trail above Santa
Lucia Ck. = *C. betuloides* Nutt.

* Possibly not this sp. but very
like it. No fruit.

Ranger's Cabin, Santa Lucia Ch. to

Stump-sprouting*

- *Fraxinus dipetala* = *vigorous*
- *Hesperomeles arbutifolia* = "
- Yerba Santa = "
- *Rhamnus crocea* var. *ilicifolia*
- Poison Oak.
- *Prunus ilicifolia*.
- *Adenostoma fasciculatum*
- (The 3 next will up on Santa Lucia flat ridge)
- *Garrya fremonti* -
- *Arctostaphylos (glauca*
- *Rhamnus californica* (type)
- *Platanus racemosa*, - deep cany. - genuine.
- *Artemisia californica*, Arroyo Seco flat, burned area, only a very few stump-sprouting.

*noted on Santa Lucia Ch. trail

West Fork, Sept. 23, 1911

- *Acer macrophyllum* - Santa Lucia Ch.
- *Platanus racemosa* - fls up dry steep cany.
- *Brickellia californica*.
- *Rubus occidentalis*.
- *Antirrhinum virga* - abundant on a hillside betw. Ranger's Cabin and 2d ford of Santa Lucia Ch. (= no. 4754) = *A. glandulosum*! See p. 118.
- *Aralia californica*, one cluster seen on west fork Santa Lucia Ch.
- *Libocedrus decurrens* - one tree in stream bottom of Santa Lucia Creek.

Santa Lucia bk. west

alt. 2000 ft.

No. 4728. *Acer macrophyllum* ^{Pursh}

These trees in bottom west fork.
^{Lucia} Santa Ck., 50-60 high, the
 rounded crowns looked very
 singular on account of the
 finely cut leaves. alt. 2000 ft.

- *Quercus chrysolepis*, a fine
 tall tree with slender branches
 thrum high, rather elm-like.
- cañon bottom below trail,
 west fork Santa Lucia Ck.,
 but the trunk not injured
 on upper side. Doubtless
 due to old fire-scar since
 slope very steep where it
 stands. Also a rather fine "grove"
 in the narrow cañon bottom east of
 the "Tit" See pp. 118, 119.

fork. Sept. 23, 1911.

- Camped tonight in a romantic
 spot, the deep narrow gorge of
 Santa Lucia creek, a short
 distance above the forks, and
 on the west fork. A craggy
 cliff rose above the stream
 on the east and everywhere
 were the steep chaparral
 slopes. We occupied a little
 flat which was free of
 brush or woody growth and
 furnished feed to the animals.
 The trail below was blocked
 with alder branches.

- *Rhus rhombifolia*, 85 ft. h., 12 to
 15 in. at 2 ft.
- *Sycamores* as tall and 1 1/2 ft.
 at ground.

Upper Santa Lucia Ck.

alt. 2000 ft. west flc.

- *Trichostema lanatum* in brushy chaparral near the "Tit"
- *Clematis lasiantha*, capitate heads.
- *Mimulus cardinalis*, in flower. = No. 4738, q.v.

No. 4729. *Brickellia californica*.
Upper Santa Lucia Ck. west fork. alt 2000 ft. Occurs abundantly along the main Arroyo Seco from mouth of cañon to Abbotts' Ranch, 500 to 900 ft. alt.

No. 4730. *Chrysopsis*.
Common along the Arroyo Seco. Spm. coll. in upper Santa Lucia Ck., circa 2500 ft. alt.

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No. 4731. *Adenocaulum*.
Scrub 5 ft. h., ^{*}sometimes small trees 10-12 ft. h. with trunks 3 or 4 in. diam. Forms a considerable part of the chaparral in association with *Ceanothus* species. Acorn crop very light this year. Called "Pin Oak" by the Abbotts. alt circa 3500 ft.

No. 4732. *Chorizanthe nortoni*!
Santa Lucia Creek, alt circa 3500 ft.

No. 4733. *Eriogonum* ^{molestum var. davidsonii} ~~diminutum~~
Lower ^{west} slopes Santa Lucia Peak, alt. circa 3500 ft. See p. 123, note at bottom.

No. 4734. *Trichostema lanatum*
Benth. with preced. Bush 4 ft. h., three
four of it woody.

* varying from 4-8 ft. h. mostly 5 ft.

Upper Santa Lucia Creek to Santa

see p. 114.

- [No. 4742. *Beaunothus integrifolius* (Ked.) Benson
H. & A. var. *californicus* (Ked.) Benson
Shrub 5 to 7 ft.
h. on average. Fruit all gone
practically. Bark dingy
yellow. [Big leaves taken
off a vigorous shrub near
water in cañon bottom on
hillside + bark green I think]
Capsule cup brown inside,
but by the next year
weathered or bleached white!
See p. 114.]

- No. 4735. *Eriodictyon crassifolium* Benth.
= *E. tomentosum* Bth.
Lower west slopes Santa Lucia
Peak, alt. circa 3000 ft. 4-5 ft.
h. [Also on Arroyo Seco, 6000 ft. alt.]

- No. 4736. *Eriogonum elongatum* Benth.
Perennial. With preced.
Also in Arroyo Seco, 500-900 ft.

Montezuma C.

Lucia Peak, Sept. 24, 1911.

- all-circa 3000 ft. var. *Davidsonii* Wats. A
No. 4736a. *Eriogonum molestum* Wats. A
Arroyo Seco.

- *Quercus wislizenii* var.
frutescens. No fruit seen.
S.W. slope Santa Lucia Peak.

- No. 4737. *Eriogonum*. Sexatile
Lower west slopes Santa Lucia
Peak, alt. circa 3000 ft.

- = *Satureja mimuloides*
No. 4738. *Galamintha mimuloides*
Benth.

With preced.

- = *C. serratodens* W. Boott
Carex bifida Boott. Det. K.K.M.
No. 4739. Sedge. *Carex aqua*
C.B. Clarke.

With preced.

- No. 4740. *Pentstemon*
With preced.

- No. 4741. *Beaunothus pappulosus*
T. & G.

Santa Lucia Peak

U.S.C. & G.S. = 5867 ft

- Look at their cones, said Dr. Abbott, President of the Monterey Peninsula Botanical Club, Look at their cones, right on the ends of the branches and that curious! Are they always that way?

He was looking with boyish interest and enthusiasm at the cones pendent from the very tips of the topmost branches of the Sugar Pine trees on Santa Lucia Peak. And by the same token he had never seen Sugar Pines before.

- *Cordylanthus filifolius*, abundant on river benches Arroyo Seco, 500 to 1000 ft. and on up Santa Lucia ^{OK} to 3000 ft. (or higher). See p. 102.

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- Sugar Pine - 60-85 ft. h., 1 to 4 ft. diam at 4 ft. Many broad-topped trees. The trees make a small grove on the north slope of Santa Lucia Peak right at the summit, the trees going right up to the summit but not on the very crest, but just a few feet below the rock-pile where they are protected. *Pinus Coulteri* is the only other pine I saw.

- Brush = *Arctostaphylos* nos. 4744 + 4745, *Adenostoma fasciculatum*, Small-leaved *Ceanothus*, no. 4742, on top.

- *Yucca whipplei*, first came in at Ranger Cabin at about 1100 ft. Continued up to 3500 ft. (!) on Santa Lucia, probably 4000 ft., and I think also not far from summit, i.e., 6000 ft.

Santa Lucia Peak

5867 ft.

No. 4742. *Ceanothus integrifolius* H. & A.
var. californicus (Kell.) Benson

See p. 110. This appeared to run into a form which was very abundant which had small leaves - about the ^{size} of the smallest leaves on my spec. There did not appear to be any dif. in fruits. The bark was a sordid or dull yellow. At the spring on the mt. was a shrub, apparently of same species, which had fruits which were still green-fleshy and their capsules were markedly 3-angled by the fleshiness. They might and probably do dry out so as to make such fruits as I took. Specimens of this shrub were to have been taken but the stay on the mountain top was very

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brief and hurried and that and a red-fruited *Ribes* escaped me in the hurry of saddling and I neglected to seize the spurs at the end.

No. 4743. *Oenothera hookeri* G. & G.
 Lower slope s.w., Santa Lucia Peak,
 alt. circa 3500 ft. Plants 4 to 6 ft. tall.

No. 4744. *Arctostaphylos* ^{*glandulosa*} ~~*canadensis*~~ ^{*var. cushingiana*}
 Fruits magenta-red. Santa Lucia Peak, alt. 5800 ft. Fruits smooth. 5200 acc. Abbott.

No. 4745. *Arctostaphylos* ^{*glandulosa*} ^{*var. cushingiana*}
 Fruits whitish & brown, very glandular sticky. alt. 5800 ft.
 No. 4745a. *Dendromecon rigida* Benth.

No. 4746. *Cycladenia humilis* Bth. ^{*var. venusta* Woodson}
 Santa Lucia Peak, 5800 ft.

No. 4746a. *Yucca whipplei* Torr.

Santa Lucia Creek

2000 ft

No. 4747. *Madia elegans* ssp. *whelanii* (Gray) Keck
Santa Lucia Peak, 5800 ft.

No. 4748. *Quercus dumosa*
Santa Lucia Peak, middle slopes
alt. 3500 ft.

No. 4749. *Zauschneria californica* Presl.
West fork Santa Lucia Cr. alt. circa
2500 ft.

No. 4750. *Lotus* ^{= *L. scoparius*} *glaberrimus* Greene.
West fork Santa Lucia Cr., alt. circa
2500 ft.
See p. 120 seq.

No. 4751. *Platanus racemosa* Nutt.
Santa Lucia Creek bottom, in deep
narrow cañon, on stump-sprout.
alt. circa 2000 ft. Leaf 18½ in.
across!!

No. 4752. *Psoralea orbicularis* Lindl.
Santa Lucia Creek bottom, alt. circa
2000 ft.

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No. 4753. *Castilleja stenantha* ^{Gray}
Lower lip corolla 3-divided,
the lobes standing out hori-
zontally like a shelf, covered
on the back with short
gland-tipped hairs, greenish
lip. Galea similarly pubes-
cent, slightly crimson-tinged
but mostly dull yellowish.
Bracts very linear, their upper
half-crimson, lower half
green, the tip coiling
(circinately) after anthesis
until the crimson disappears.
The crimson also fades.
Calyx-lobes linear-acute, the
very tip with a sharp deep
notch, the notch however
small

Santa Lucia Creek

2000 ft.

- *Artemisia heterophylla*.

No. 4754. *Antirrhinum glandulosum* ^{Trunk}
 5 ft. h., many ^{flower-}stemmed from
 base. See p. 105. 2500 ft.
 cf. vol. 7, p. 15, p. 20.

No. 4755. *Composita*.

Arroyo Seco near Abbott's
 Ranch, alt. 900 ft. 4755a
 on Santa Lucia Cr. 2000 ft.

No. 4756. *Bigelovia arborescens*.
 10 ft. tall and trunk 2 in.
 diam. Arroyo Seco ranch.
 alt. 900 ft. ^{above}

No. 4757. *Quercus chrysolepis*
 Santa Lucia Peak, mid. slope,
 circa 3500 ft. acorns only. See p.
 106.

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- *Quercus lobata*, white-
 trunked form, at the Ranger's
 Cabin on the oak slope
 there. The trunk is some-
 times white and the
 crown ^{very} is destitute of
 pendulous branchlets.
 These trees would illustrate
 further the condition described
 in my Silva on plate 1.

- *Quercus chrysolepis*, rather
 common, considering the
 scarcity of trees from
 near top west peak Santa
 Lucia Peak down Santa
 Lucia Creek. Called *Palmaris*
 Oak by A.H. Abbott.

Santa Lucia CreekSwitch Plants.

- *Lotus glabra*, lost all its ^(i.e. scoparium other) leaves, green stems in an erect broom-like tuft. no. 4750.
- *Solanum umbelliferum*, the green erect shoots destitute of leaves as well as of flowers and fruits = *S. xanth.*

Tree-like Shrubs.

On the Arroyo Seco flat or rather the various river benches one finds examples of the various chaparral shrubs which grow on the mountain sides above. These examples are, many of them, tree-like. *Fraxinus dipetala* is described on

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p. 98. *Rhamnus ilicifolia* becomes a small tree up to 12 ft. h., *Prunus ilicifolia* up to 14 ft. h. These three are the most marked cases. They have plenty of room on the bench, the soil is better and they become more or less arboreous. Any traveler on the Arroyo Seco would have his attention attracted to these forms. Now such large-sized forms are generally found on benches and it is on river benches that travelers pursue their way. Consequently an exaggerated idea is obtained of (Cont. p. 126)

Berkeley

- *Pinus muricata* is in Pine Cañon, 15 miles northwest of Purissima. This cañon runs north and south, the watershed to the south. *Pinus tuberculata* is all over the "San Luis Mts." on the coast west of San Luis Obispo. It makes the stand.

[The above notes were given me today by J. Smeaton Chase, author of "Yosemite Trails", etc., a little and short fair Englishman, with a rather thin somewhat hollow cheeked face, but healthy good skin. The features small rather. He's traveling horseback from Los Angeles Oregon line; to make a book of the Coast Ranges. Spoke of the Mansfields,

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Plashetto, Abiloko of the Santa Lucia coast.]

- The cañons from mouth of Arroyo Seco to Abbott's Ranch were: Release, Wild Horse Piney and ^{one} other that I forget.

- *Prunus ilicifolia* was common up the Arroyo Seco and up the sides of Santa Lucia Creek Cañon along the trail to at least 2000 feet.

No. 4733. Cmt. This is dif. in leaves + flo. from 4736a. Invol. not glob. in this. Per. segs. elliptic, while in 4736a they are oblong - or cuneate - obovate.

Berkeley

- Big-leaf Maple. Wood becomes very hard when seasoned. It does not split readily. It is light. Saunders, Bot. 12, has a plant press made of it. He says the sawmill at Garcia did not want to saw the log for him.

- *Arundo sativa* or *Phragmites communis*. Reed. "Small pieces worked down to a thin ridge used as mouthpieces by flute, clarinet, etc players. The French have a monopoly of the manufacture, they grow the plants in the S. of France. Sell the ordinary kind at \$1.50 per doz. But as each player has his peculiarities he may be able to

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use only 1 or 2 pieces and they last not more than 2 weeks since they take up the moisture from the mouth and cease to vibrate. Why not grow the plant in this country and so save this talk we pay the foreigner? There are safely 100,000 clarinet players ^{alone} in U.S."

- E. A. Wall, Sousa's Band, Oct. 7, 1911.

- Heredity of cuttings. *Torreya californica* stumpsprouts have sex of parent tree says Robt Brandt Bot. 4. So do Strawberry cuttings.

- Dudley, W. R. Re. Dudley Herbarium, see Stanford Register, 1910-11, p. 149.

[Berkeley]

[Cont. from p. 121.] the size of these species, or rather an exaggerated idea of the usual or prevailing form which is a shrub of the chaparral.

- The view from the top of Santa Lucia Peak was very fine. Perhaps the finest ^{and most extensive} view to be had in Coast Range country. The peak is so much higher than any other point in the Coast Ranges for hundreds of miles that the country is spread out like a map: The Salinas Valley, Gabilan Range, Cholame Peaks, San Lorenzo Creek, Pacheco Pass, Hepstead Peak and San Carlos Range, and south to what I took to be mt. Was on the coast - a very

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prominent landmark from here.

Most interesting to me was the geography of the San Antonio & Nacimiento River valleys. The

upper San Antonio as an arm of it comes directly under Santa Lucia Peak on the south and is remarkable for its rock exposures which suggest dome-structure of a Sierra cañon. This upper valley was connected by a narrow ^{pass} with the main San Antonio valley and perhaps a second pass also. The Sierras could be seen in the far distance.

- Traveled with Dr. Abbott of Monterey who took his machine from Monterey to Arroyo Seco. From

[Berkeley]

there we had animals and went up the Arroyo Seco from Abbott's Ranch as far as the Ranger's Cabin at mouth of Santa Lucia Creek, thence up Santa Lucia Creek taking the west fork and crossing over the divide at its head and descending into the cañon ahead of another creek of which we did not know the name and then to the divide on shoulder of Santa Lucia Peak overlooking the upper Jolon or San Antonio valleys, thence around the sides of Santa Lucia to a ridge or saddle where we met the old Jolon trail up to the summit and which came straight up a cañon

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from the upper Jolon valley. This second divide that we passed lay in a saddle between the main mountain and a rough mountain mass west the sharp peak of which I had seen from far down Santa Lucia Creek and which for want of a name I had called the Tit, altho' not a good name for it. The stream that heads between the second divide and the first divide (head of Santa Lucia Cr. west fork) on west side of mt. runs out westerly but the mts. are so sharp and high that we could not tell whether this stream belonged to the San Antonio or Arroyo Seco.

Berkeley

- *Pinus coulteri*, an associate of *Pinus lambertiana* on the top of Santa Lucia Peak was or seemed to be scarce. Our stay on the mt. was very brief. There was no feed for the animals. There is a little spring amongst the Sugar Pines on north side about 350 feet below top. See page 113,

- Brewer, W.H. Author of "Cereal Production in U.S." in vol. 3, Tenth Census.

- *Daucus pusillus* as a rattlesnake remedy. Davy in letter file, 1898.

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- *Epipactis gigantea*, Mt. D. "as tall as I am" C.F. Saunders. After a bit I asked: How just how high would you say in feet? He thought a bit and said five feet. (!) Near Peachtree Spr. Oct. 15, 1911.

Vacaville, Oct. 8, 1911.

- Rained last night a rather heavy shower. Yesterday afternoon lazy clouds gathered but the wind went down and at 4:00 I started on a walk to the Little Oak Ranch. The air was marvelously clear, that wonderful clearness and softness that comes just before a rain in the fall of the year. From Coburn's Hill I could see to Downston. But most wonderful were the Arquipa Hills with their tan color having a luminous quality. I have never seen anything in coloration of yellow foothills like it. Of course the next day it was gone, - altho a brilliant day.

Mt. Tamaulpais c. 1700 ft.

- *Pickeringia montana* - a few flowers, several shrubs
- *Castanopsis chrysophylla* var. *minor*, 6 ft. h.
- *Ericameria arborescens* - in fl. making yellow dots on the brown chaparral-chemise hillside.
- *Ceanothus prostratus* var. *divergens*. All Bot. 4 students guessed "oak"!!
- Chaparral above Redwood Can. *Adenostoma fasciculatum* H. & A., several manzanitas, amongst them *Arctostaphylos nummularia*, *Quercus wislizeni* *futescens*, *Baccharis pilularis*, *Larrea elliptica*, a little; *Ceanothus foliosus*, *C. prostratus divergens*,

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C. rigidus, *C. thrysiiflorus*. *Pickeringia montana*; *Eriodictyon glutinosum* etc.

- *Pinus radiata* apparently, small tree about 10 ft. h. on hillslope just above terminus of Pipe-line Trail and on way to Rock Spring, a little below the wagon road from West Point to Willow Camp. The only individual and it puzzles me greatly. How came it there? For it is apparently spontaneous and in a wild place. ^{was told later by some one that these had been plantings.}
- No. 4758. *Ericameria arborescens* see p. 132.
- No. 4759. *Quercus dumosa*. One shrub (normal) few acorns, good foliage; another shrub with 5 ft. leaves showing pathological condition, very heavy with acorns.

Berkeley

No. 4760. *Calycadenia multiglandulosa*
 DC. ssp. *cephalotes* (DC.) Keck
 Open slope near Rock Spring.
 Mt. Tamaulpais. 2300 ft

No. 4761. *Arctostaphylos*
montana Eastw. Mt. Tamaulpais.

- Hilgard, E. W. *Chamaenerion* Hilgardianum
 U.S. Geol. Rep. 7, 247; 7, 249

- Purpus, C. A. "Sw. Cal to S. Utah
 May - Oct, 1848". on label on
Dalea fremontii in U.S. hb.

- Gray, A. Bot. sketch by Walter
 Deane in Bull. Torr. Club, 15:
 59. Note on his trips to California.

- Botanical Exploration in Calif.
 Wicks Exch. of. Notes on Upper
 Cal. by James D. Dana [Am.
 J. Sci. 2d ser. 7, 247 (1849)].

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"Why, when we began Botany
 3, in studying the leaves,
 we didn't know what to do,
 we didn't know what you
 wanted. But we had to work
 it out for ourselves and will
 never forget it. I think such
 questions as you give are
 stimulating and interesting. Of
 course when we began Bot. 4 -
 well, you told us to go and
 get some material; we spent
 all the first period asking each
 other what he wanted us to
 do with it! But we had to
 find out by working it out
 ourselves - and that is the
 best way" - Theresa Harrington,
 Bot. 104. This is interesting

Berkeley

only as proof of my old contention that the way to teach is not to teach, a paradox meaning that the only way to teach is to leave the student work out his own salvation and not to make things easy & carry him along.

- Fl. W. Mid. Cal. 2nd ed.

MSS to printer as follows:

Pages 1-350 - Oct. 14, 1910

" 351-856 - " 25, "

" 857-1945A - " 29, "

" 1495B-2485 - Nov. 5, 1910.

The printer (Stanley Taylor Co.) did little on the job until Dec. 24. Then he rushed it through and got it out of press about Jan. 18. The binder finished 1st lot Jan. 24, 1911.

Oct. 23, 1911.

- Pacific Coast Biological Society Meeting & dinner last night at Heidelberg Inn, S.F. Pierce read a good paper on the effects of cement dust on plants; he proved that the ^{1st} dust about Cement works that does the damage to plants and why it does. The dust forms a coating on the surface of the leaf and with a little moisture naturally sets, making a coating of real cement which cannot be removed from the plant without injuring the leaf unless one is very careful. On Orange trees (near Colton) Pierce cleaned half the leaf in a number of cases. He found that the clean

Berkeley

half set 5 times as much starch as the dirty half.

Curiously enough this coincided with the report previously made by me grown that his crop had been decreased by $\frac{1}{5}$! Pierce found that the starch in orange leaves (but not in lemon or grapefruit) is withdrawn from the leaf into the stem each night. This gave him a very favorable opportunity for his experiments.

Pierce has also been working on the problem of the copper smelters. He has complete proof that the copper smelter fumes do the damage to vegetation. I asked what he thought of

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Osterhout's investigation. He thought O. had not investigated and was merely "talking through his hat."

Sat next to Abrams who said Greene^{E. L.} received a nominal salary as Associate in Botany at the National Museum (\$600⁰⁰) and a much more as expert for det. plants for the U.S. Dept. Agr. The Smithsonian has a contract with Greene for ten years (it is now up in 2 yrs) to buy his Herbarium for \$40,000⁰⁰! There seems to me like quite a round sum. The Smithsonian under the contract houses the herbarium, it is stored in steel cases and is, so, easy to poison (the Smithsonian looks to all this).

Berkeley

Campbell^{D. H.} was there and did not seem quite as stiff as usual. Met Jenkins who sat opposite & mistook me for Joffa !!! After a bit I discovered it and chaffed him but Jenkins insisted that altho mistaken he knew who Jipson was & had bought his books. Harold Heath was next to Jenkins, & Fisher on the other side. C. H. Merriam came in late. Bridwell, John C. Merriam, A. H. Moore, Meinicke, etc. came from Berkeley. Burlingham of Stanford was introd. to me. Allogelben a very pleasant evening. Abrams said that Kennedy and Keller are planning a Flora of Nevada.

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- Greene, E. L. I was looking up *Amorpha californica* today and read in *Erythra*, 1, 131, Holzinger's article and Greene's commentary. How such a commentary must have endeared Greene to his correspondents and contributors! Holzinger was doubtless right and if he was dogmatic - well, was it that Greene would allow no one but himself to be dogmatic? - (Nov. 16, 1911).

- *Pinus lambertiana* - occurs as far north as Alder Creek in S. Mendocino near coast. Only an occasional tree here and there. The northernmost station is about 6 mi. from coast on Alder Creek. - Jas. Saunders, Bot. 113.

Niles

- Tul. Great quantities used by the California Nursery Co. for shipping packages of plants.
- *Pyraecantha coccinea*, making a great show now, with its brilliantly colored pomers.
- *Pinus equisetis*, its tufts of long slender leaves are very fine, making it a most beautiful tree to look at.
- Bot. 104 trip to Niles today. Met Roeding of Fresno. Says that as a boy he botanized the hills about S. F. bay. with old Dr. Behr, "their family physician, a fine physician, but if there were butterflies or plants

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around he would forget the patient." He also spoke in a reminiscent way most cordially of Dr. Harkness. Also knew Miss Eastwood and inquired for her.

- *Tunga heterophylla*, its southernmost limits, says Mr. Brandt, are as follows:

One tree, rather old tree, at mouth of Gualala River on Sonoma side. Trees common on "Little North Fork Gualala River" (there is a "North Fork" Gualala River in addition) and on South Fork of Garcia River. These latter stations are about 2 or 3 miles from the coast. Little North Fork Gualala River is nearer coast than North Fork Gualala River.

Niles

- *Barbenteria californica* -
Roeding of Fresno says that
he has been collecting seed
this season at the "Tollhouse
above Fresno" in the mountains
and obtained a good supply.
- *Abies grandis*, trees at
mouth of Gualala River and
also in the Sonoma coast a
little back of Stewart Point
says Robt. Brandt. Says
his brother worked in a
sawmill and sawed up
white fir for "No. 1 Spruce
flooring".

Oct. 28, 1911.

- *Picris schioides*, Niles.
 - *Conium maculatum*, Niles.
-
- *Trifolium obtusiflorum* Hook.
Ralph Hodgin, Bot. 12, says it
is called "Salt Clover" in the
Sierra Nevada about Northfork.
cf. Chestnut, plants used by
Mendocino Indians. [See p. 95 ante.]
-
- *Rhus diversiloba*. Prof. A.H.
Moore has had a bad attack
of poisoning from Poison
Oak, eyes swollen, etc. He has
not been in the hills. Dr.
Schubert brought into lab. a lot
for me to examine. Moore probably
got it off the door knobs & ban-
isters. He used potassium perman-
ganate solution, & believes it cured
in 3 days what would otherwise have
been a week or more.

Napa Range

Near Atlas Peak

— *Juglans californica*.First grove, on east slope,
a little S. of Atlas Peak.No. 1. Tree with tabular base
for 15 in. Circ. at 2 ft 6 in.
= 10 ft. 4 in. Tree 65 ft. h.Rough barked, forking at
6 ft into two main ascending
arms.No. 2. 7 Sprouts forming a half
circle 6 1/2 ft. diam. Sprouts 1 to
2 ft. diam at 4 ft, more or
less blended. Below this, oneof the sprouts has rotted
through and fallen over but
still maintains a connection
and has a little foliage.Chest 70 ft. h. The limb
which had fallen over was cut into

Nov. 11, 1911.

with an axe. The ^{heart}wood was very
hard and very black. The heart
was 4 in. and showed 41 rings.
The sapwood is very white &
shows no rings at all, being 3/4 in.
thick.

No. 3 = 8 ft. 9 in. at 4 ft.

No. 4 = 5 ft 4 in. " " "

These two 55 ft. h.

A few other trees below,
mostly cut off & now with
stump sprouts.

No. 4762. *Juglans californica*
Near Mt. Atlas.No. 4763. *Acer macrophyllum*.
Keys. Near Mt. Atlas.

Napa Range

near Atlas Peak

- Stump-sprouting. *Juglans californica* is stump-sprouting most freely, as a result of the wood-choppers cutting this woodland for firewood. I count & estimate 120 sprouts around a stump about 2 ft. diam.
- The species associated with *Juglans californica*, or rather *Juglans californica* is in a woodland composed of *Des macrophyllum*, *Quercus kelloggii* (the dominant sp.), *Arbutus menziesii*, *Salix lasiolepis*, *Besulus californica*, *Umbellularia californica*

Nov. 11, 1911

- *Plus diversiloba*, berries eaten by quail! + by turtle-doves? says "Charley". Madrone berries eaten by red-pigeons; also eat Christmas Berry.
- * a youth who acted as guide.
- *Juglans californica* stump - 16 in. radius on one side. I count on outside 28 rings to $2\frac{5}{8}$ inches. Makes about 150 years as age.
- Two trees close together on flat. 10 ft. 6 in + 9 ft. circ at 2 ft, the first - forking into 3 at 3 ft, the second into 2 at 4 ft. A third tree near the two. Rather large clumps.

Napa Range

- *Juglans californica* stump, sawed, counted 84 rings plus at least 16 in center very fine. Tree surely 95 or 100 years old. Radius along count $9\frac{1}{2}$ in. Diam. = 17 in. A great fine lot of sprouts about this stump.

- *Acer macrophyllum*, heavy with fruit as usual, but I do not find a single good seed on cutting open the pods. I have seen *Fraxinus oregana* in winter, barren of leaves, but the tree crowded with samaras. Are such seeds that hang on so long fertile? Do fertile seeds fly promptly?

Nov. 11, 1911

- This trip to Napa Range is in company with Prof. R. E. Smith. to survey the locality known locally as the "Walnut Grove". Prof. Smith has visited the place previously, 3 years since, driving over from Vacaville in one day. We went this time via Napa, going by stage from Napa to Wildernis Inn (Atlas P.O.) high up on the s. slope of Atlas Peak in a notch of the main ridg. We passed on through the ridge and south on the east slope for a distance of about a mile and came to the clump of trees

Napa Range

called locally the Walnut Grove and referred to as the first grove p. 146 supra. The trees here stand in a wet place, a half-dozen or so of them. Some of them have been cut down. We followed a wood road south $\frac{1}{8}$ mile & found the three trees described at bottom of p. 149. Thence south along the slope we found trees scattered through the woodland of *Quercus Kelloggii* and *Acer macrophyllum* and *Arbutus menziesii*. They were distinctly scattered. One here and one there. I think 100

Nov. 11, 1911.

would be a large estimate. Many had been cut by the wood-choppers taking out the oak for fuel. From these stump vigorous sprouts had arisen; well towards south limits their reproduction clumps were very vigorous, one-year's growth being 4 ft. h. The ridge is very even on its crest here; the slope is very steep immediately below crest for say 300 feet, then there come an irregular series of terraces and "cusps" or hollows, like the tablelets along the fault in Marin Co where the

Napa Range

cups or hollows have been produced by earth movements along the line of the Tamales - Portola fault. These cups, hollows, & terraces on the east slope of the Napa Range may have been produced by landslides merely.

Below the terraces is a gradual slope ending in the bottom of the cañon which joins Wooden Valley & Capell Valley. There may thus be said to be three divisions to the east slope; the lower slope; the middle or terrace zone; the upper abrupt slope;

Nov. 11, 1911.

the walnuts being found only in the middle part.

The trees have tall trunks and upright character generally in this respect agreeing with the northern type or var. *Hindsii* as represented at Walnut Creek and Walnut Grove. Even the young trees have straight tall trunks and excurrent axis. I had imagined from what Professor Smith had previously said that they were like the southern type, but they are not.

Professor Smith says that the differences in the two types are marked in the seedling stage; the southern type is

Napa Range

clumpy or condensed, the northern not; the southern holds its leaves nearly over the winter, the northern loses them early; the two react differently to different fungi, the southern having a root fungus, the northern a yellowing. Prof.

Smith asks if any fossil Juglans has been found in the north Coast Range?

(Found a-plenty in Oregon. Cf. Knowlton, Fossil Flora of the John Days Beds.)

Also look up Lesquerens Flora of the Auriferous Gravel Deposits of the Sierra Nevada.

- Eupressus - (? sargentii) in Devil's Cañon, Bismarck Knob, Napa Grande. acc. Miss Herron, of Alta P.O.

Nov. 11, 1911.

- Prof. Smith says Douglas Fir is immune under the influence of the smelter fumes at Kennett, but is not immune at Butte, Montana or in Montana. This is a curious difference. By it is meant that in the upper Sacramento Douglas Fir is one of the last trees to go.

- At Napa city I found a number of specimen trees of Sequoia gigantea in the Residence District. A fine one stands in the lot s.e. cor. Division and Union ^{residence} streets, 65 feet high, 2 feet at ground. Another, with finer ^{crown} diam. is at n.e. cor. Clay and N. Randolph sts., 70 ft. h., 2 1/2 ft. diam. at ground. All the measurements

Napa Range

are estimates.

- *Godetia grandiflora* at Parallels in abundance says Mrs. Hunt + Alice Wood who independently describe the flowers + infl. in such a way as to leave no room for doubt. Parallels, a new town, on ocean shore a little s. of S.F.

- *Arctostaphylos manzanita*, my shrubs all dying from poisoning complaining Mrs. Hunt. of St. Helena. Says they "bleed dreadfully" when sawed.

No. 4764. *Quercus Kelloggii*.

Leaves in seedlings very variable in shape. No bristles or short ones. Tap roots very deep. I didn't have my

Nov. 12, 1911.

botanical pick and it was impossible after digging around them with a jack-knife to pull them out by main force. They are 2 year old seedlings.

- We stopped at Wilson's Inn. (Arno Wilson), Atlas P.O.

- Purpus, C.A., was collecting in the Sierra Nevada, Kaweah mtns, Aug. 1892, taste label on *Sagittaria latifolia* in U.S. HB.

- *Ceanothus incanus* - cut down for goats to feed on. The goats like it - wilted one day old. Will eat foliage on shrub, also - Jos. Saunders' observation in Mendocino Co.

- Spig-nut. Harry Yates, Bot. 109, has brought from Trinity Co. a plant that in its fruit very like *Aralia californica* but

Berkeley

the leaves are too small and too thin; the carpels are 5, but often 6. = *Aralia californica*!

- Redwood, white. See H. A. Greene in "letter file!!" Trees Cal.

- Seed crops oaks and pines etc. affected by climatic conditions at time of pollination, rain, cold, etc. By insect attacks; few acorns this fall and those few with grubs. Tan Oak acorns all empty says Saunders, Bot. 113. Effect of caterpillars on foliage must eventually affect crops of *Quercus agrifolia* say. Next year after devastation probably full crop of acorns but barren years for

Nov. 1911.

several years is probably the case. - Nov. 1911

- *Quercus agrifolia* scrub, at Lake Merced, ^{S.F.}, at this time with small acorn buttons size of *Quercus wislizenii* (3 lines long) 5 to 19 in compact clusters terminating the branches as if they had taken the place of winter buds! Also full grown acorns on another branch, this year's wood. - Brought in by Saunders from Lake Merced, Nov. 26, 1911.

- Brewer, W. H. There is a Brewer Creek on east slope Mt. Shasta, possibly named for Brewer.

- *Pinus lambertiana*, cots = 17(!), 14, 14, counts made by members Bot. 104 class. I carefully verified the ^{case of the} embryos with 17 cots - Nov. 16, 1911. - Material

Berkeley

from Sierra National Forest.

- Lemmon, J.G. There is a Mt. Lemmon near in Ariz.*

- Stillman, J.B.D., reference to his collecting journey in northern California, Proc. Cal. Acad. iv, 170.

- Harford, W.G.W. cf. Proc. Cal. Acad. Sci. 4, 102, for note on his botanical collecting.

- Hillebrand, coll. in Sierra, ref. to, l.c. p. 103.

- *Heteromeles arbutifolia*, the berries form the chief food supply of the quail in winter time. - Dr. D.M. Carpenter.

- Dudley, W.R. Sketch of his life by David Starr Jordan, Science, Aug. 4, 1910. or ? 1911

* B. Spaulding, Pl. World, Feb. 1910.

Nov. 1911.

- Poison Ivy. cf. New York Med. Jour. July 31, 1909; Science, N.S., vol. 27, p. 652, Apr. 24, 1908; Schittenhelm & Wrichert, Münchener Med. Wochenschr. No. 16, 1911. All the above re.

the poisonous principles.

- Prof. Hilgard believes poisoning from *Rhus toxicodendron* may result from passing to windward in case of sensitive persons.

Instances a case of a member of his family in southern Ill. on the Miss. uplands. Thinks swelling of face as severe as in Poison Oak (*Rhus diversiloba*) poisoning but says that chances of poisoning are far less in case of *Rhus toxicodendron* on account

Berkeley

of its being less widely distributed and less abundant. Also that as it climbs trees people are not likely to come in contact with the foliage unless they climb a tree. — Says certain people take ^{small} doses of the pharmaceutical ^{with} ^{or vacation} ^{toxic} before going into the woods and claims that this renders them immune. Hilgard uses amaranth. Believes with me that the great majority of people exposed, poison. I find few people immune really. Hilgard said he was immune as did Judge Platt but admitted that he might rarely get a little itching on wrist. Hilgard advanced the view that the danger

Dec. 5, 1911.

is greatest when perspiring heavily and so people in the East take it more freely than here. I doubt this rather. I work through it when climbing on hot days in the hills and never take it. So says Dr. Sisson. One thing is certain. It is so common everywhere here that people must stay out of the hills to avoid it.

— The "moss" [lichen] on the white oaks in the Templeton-Carrizo country was fed to sheep in the "starvation years". Many sheepmen saved their flocks in this way. "The oaks were sometimes cut down — a terrible vandalism" — Mrs. F. H. Robinson, 2809

Berkeley

Russell St. Berkeley, who also describes two tremendous Live Oaks at Templeton, under which there was ample room on a hot day for the crowd attending a Fourth of July celebration.

- *Aralia californica*. This is the plant called "Spig-nut" in Trinity Co., seed brought by Yates. [*Aralia racemosa* is also called Spig-nut acc. Britton & Brown, Ill. Fl. Evidently a transfer to the western species.]

- Systematic Botany, H. de Forest, Forest Assistant in U.S. Forest Service, now at Weaverille, S. Cal. The lack of training in systematic botany is a great gap in the

Dec. 28, 1911.

forester's training in the U.S. He doesn't know his plants at all. Formerly it was thought sufficient for the forester to know the trees in his forest. Then the shrubs were added. But I think he ought to know the small plants as well. In fact word has now been sent out to collect everything. But we don't know the things and we have no mammal. Even if there were a mammal for each region in the west there is scarcely a forester that knows how to use one!

- Chandler, H.P. Here this academic year as Assistant in Botany. Working with great enthusiasm on his ms of a new text on geography for the schools. He says: "I've really lost

Berkeley

all my interest in botany. This work is so much broader" — [!!].

- Climate. Long dry fall. The rains were slight showers and but one in Nov. November & Dec. were very dry. Then Dec. 29, 30, 31, there was a real storm, sufficient for the farmers. (My dates may not be exact within a day or so). But there was practically no rain from ^{just} May 1911 to Jan. 1912!!

- *Quercus agrifolia*, "large tree with very low wide-spreading branches covering an acre, at Seaside near Humbrey; room for 100 people comfortably beneath it. Doesn't look large but when you get beneath it, it is seen to be

January 2, 1912.

a large tree." - So says Miss Cooper of Haywards, daughter of ^{Dr. J. J.} J. J. Cooper, the ornithologist, whom I met at Dr. Carpenter's Jan. 4.

- Southern pineeries - Francis Steele here, fresh from his trip in lumber regions along Atlantic coast. In this, the Great Southern Louisiana Lumber Co. uses negro help in the woods. It is very cheap. The negroes are very happy and very ignorant. They receive 8, 9, 10 cents an hour. Steele says company would be willing to pay more but that if paid a large sum they will not come back to work until they have spent it all, which in their simple life may be some time. Steele says the

Berkeley, 1911

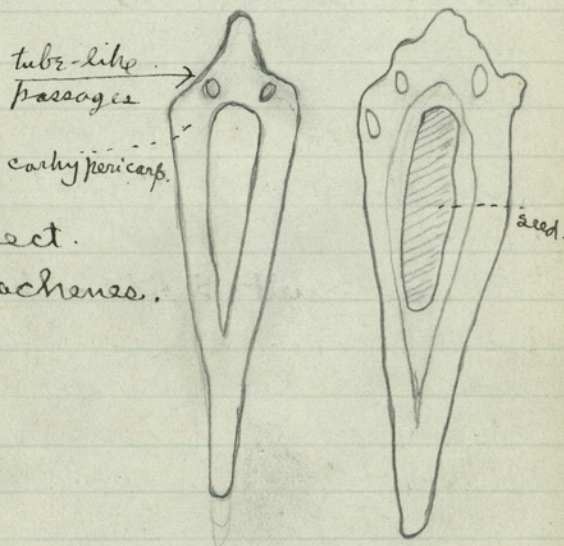
old time "ancestor story" was demonstrated for his benefit by a foreman on a negro when he came up for his pay: "Sam, have you got any ancestors? No, sah. I aint got no ancestors. No, sah, there's nothing the matter with me. Ise a sound nigger, I is. Yes, sah".

Half fare permit, S. P. Co. - Used for trips collecting Bot. 4 material and observations for Bot. 4., to Mt. Hamilton to look up pines, to San Jose to lecture before Berryessa Valley Improvement Club, to Menlo Park before Menlo Park Peninsula Bot. Club, to Vacaville to observe flowering period of

January 2, 1912.

Escholtzias, etc + to coll. Bot. 4 material, etc, etc. To Kapa at request of Smith to look up wild walnuts

- *Sagittaria greggii*.



X. sect.
of achenes.

Material coll. at Lathrop by H. Brandegee, Sept, 1907.

Berkeley

- *Pinus lambertiana*. Within one mile of Sea a little south of Iverson (within 3 miles of Gualala) on Mendocino coast, acc. Brandt. But mostly at 3 miles. *Tsuga heterophylla*, same district near the coast, 300 to 700 ft. alt. *Sequoia sempervirens*, 3 very large-leaved trees near Iverson, 1 to 1 1/4 in. long.
- Davidson, Prof. Geo. who died recently, took always an interest in the work of botanists in his long career in California, while on the Pacific Coast Geologic Survey. He took Kellogg to Alaska; Greene to Mt. Diablo.

Jan. 18, 1912.

and himself collected a few things in the Sierra Nevada, whence the "Davidsonii's". He was a man of great original personal force and power. He was also a very profane man, according to Mrs. E. V. Hathaway, who knew the family long. The profanity fitted in with his remarkable ruggedness of character perhaps.

- *Canotius integerrimus*, seeds dull; *C. laevigatus*, seeds shining, but look up other species.
- Ant-wood, name used for some plant of Modera Co. by Ralph Woddin which he cannot well describe.
- Ironwood is Woddin's name

Berkeley

for *Cercocarpus parvifolius*.
 For *Freemantia californica*
 he uses Slippery Elm and
 says the inner bark can
 be peeled into narrow
 strips and used like the
 "raffia" of the gardeners.
 He says that "Ironwood"
 can also be stripped sim-
 ilarly. Perhaps also Red Bud.
 His name for *Chamaebatia*
foliolosa is Bear-clown;
 he recognized a small
 fragment by its odor.

Brandt says *Rhus trilobata*
 sprouts to make clusters.
 Hoddin calls it Stick-
 bush and say the Indians
 took to the bushes when

Feb. 6. 1912

the fruit is green and eat
 the berries with salt!

All this from middle p. 173-175
 prompted by a collection of
 Indian plant specimens
 sent out from the Oakland
 Museum ^{which} had ^{been} received
 from Plumas and Butte Cos.

— *Sequoia gigantea*, the grove
 at Chico Forestry Station dying
 out, branches dying back.
 Began to die in 1906(?) after
 a week of severe north-
 wind in 1905. See letter to
 Miss Smith, Plant Pathology,
 in Feb. 1912. From foreman
 Chico Station

— Hooker, W. J., Portrait in
Annals Bot. vol. 16.

Berkeley

- U. S. Consul-General Wilder of Shanghai is at the Berkeley Inn. He said: "It is to be regretted that our children cannot get an interest in the woods, in plants for their pleasure and for the enrichment of their lives. The study of botany is one of the greatest of pleasures, but the child or the student never finds this out from the work in school or the work in the university or college. No college student ever has this love of plants. I have four children coming on

March 16, 1912

and it is natural for me to think a good deal about their education. For the botany I think I would have one of your students take them into the woods, a student who had great enthusiasm and who could communicate that enthusiasm and love for plant life. It must be done personally; it cannot be done in a large class." He then apologized for attaching the University classes but I told him that I had often expressed the same idea in different terms.

Berkeley.

- Dr. C. L. Anderson.

Miss Hutchinson, who has just called, tells me that Dr. Anderson is not now living, died a year or two ago. He has a daughter, a Miss Anderson, who lives in the Santa Cruz Mts., about 1 mile from Mt. Hermon P.O. She has her father's herbarium which is for sale (2000 sheets). The grasses were sold to Stanford. Miss Anderson does very fine pressing.

asked her for photo of Dr. A. Sept. 1912

- Lysichiton Kautschatensis.
Brought from Felton, 1 mile from, by Miss M. L.

March 21, 1912.

Hutchinson, March 21, in flower. It created a sensation in the Bot. 104 class.

- Trees of Cal.

- Great Maul Oak, 7 m. north of Etnsburg and 10 to 12 m. north of Shelter Cove, 30-35 ft. circ.

- Tan Oak, fir-like trees. "As the acorns were dropping on the roof at all hours of the day and night, my sleep was not of the best; so I grubbed it up; it measured 135 feet h. Another was about 150 ft. h. - Albert F. Etter, in Pac. Rural Press, Jan. 2, 1904 (p. 12, vol. 47.)

Berkeley

- Valley Oak and Antelope, Large red antelope aggregate in large numbers near a large tree in our yard and go up the trunk a short distance. - Miss Ruth Riddoch, Lakeport.

- Oaks in St. Helena Range:

- Quercus lobata*
- " *douglasii*
- " *garryana*
- " *lumosa*
- " *chrysolepis*
- " *agrifolia*
- " *wislizenii*
- " *kelloggii*
- " *densiflora*

Larger number than in any other range in California?

Mar. 1912

- Madroña. Faultless in form, 65 ft. tall, 270 ft. circ. branches, body 24 ft. 4 in. circ.; 7 ft. from ground is 11 to 12 ft. through solid wood at crotch. it is the old council tree where the Indians of the coast used to meet the interior tribes in council; $\frac{1}{2}$ mi. from Etnsburg P.O. - Albert H. Etter in Pac. Rural Press. Jan. 2, 1904 (vol. 47, p. 12).

- Umbrella Tree. Judge W.O. Minor speaks of the fine qualities of these trees as street-trees in the San Joaquin Valley towns, dense shade, rapid growth, good form, etc., but that they blow over under the trade winds. He has seen a whole row in certain instances been made stocky and so stand the wind. - March. 24. See p. 199.

Berkeley

- Timber Belts of the Pacific Coast, A.W. Chase in Overland Mo. Sept, 1874.
- Redwood, 75 billion feet standing. Fernow, Outlook of Timber Supply, For. & Irr. May, 1903
- Forest Fires destroyed 12 million dollars worth of timber in Wash. & Ore. 1902. in 2 weeks.
- Annual loss in U.S. = 25 to 50 millions.
- *Juglans californica*, bore 100 lbs. at Foothill Station (U.C. Agr. Exp. Rep. p. 277. 1897-98.) See also refs. on forestry stations in the various reports

Mar. 1912.

- *Quercus agrifolia*. The name *agrifolium* is the old Latin name of the Holly.

Dodorus, *Stirpium Historiae* Pemptades, p. 746., heads Cap. xx: De *Agri-folio*. A wood of the holly has the legend "*agrifolium*". Later on he says: *Agri-folium* hunc fruticetum arborescentem Latini vocant."

This fine old folio was printed at Antwerp, 1583. "Ex officina Christophori Plantini"

[This note made at Kew in 1906.]

Berkeley

- *Bichorium intybus* in Jersey, Guernsey, increases the flow of milk in cows. See Plant Lore of Shakespeare, p. 198.

	ft.	in.	Height.
- Valley Oak. at 4 ft.	9-3	-	45 ft.
" "	8-7	-	33"
Blue Oak, " "	7-2	-	28"
" "	4-6	-	25"

- Alamo Hills, Aug. 1898.
- Monterey Pine. Note in Reports of County Assessors 1865, p. 226. See separate.
- Douglas Oak. Hilgard says greatest development between Paso Robles and Tehachapi and a corresponding latitude in Sierra. [I

March, 1912.

doubt the zone being so far S.]

- Valley Oak. Hilgard thinks the withdrawal of water for irrigation caused the S. Cal. oaks to die in the dry years [of '97-'98]. Humic acid would not account for Valley Oak being the only oak on the richest valley soils; he thinks fires of Indians; says, Tulare forest is unique, - only oak. I said Spanish Grunts took in most of the Valley Oak forests.

Berkeley

Pinus insignis. "Make 2 to 3 new growths each year" - "rapid growers" - "rarely survive 20 years at Chico" - General Bidwell. [Mechan's Monthly, Mar. 1897. p. 44, vol. VII.]

- Monterey Cypress. The last tree in the college lot stands to the rear of the new High School building. It is a survivor of the extensive old grove and in some way resisted the borers which killed all the rest. See *supra*, 3:75.

- *Pinus sabiniana* on serpentine. "Pine in Las Galus Cañon, up cañon

March, 1912.

from Wrights. Follows the serpentine, about 2 to 3 miles from Wrights, up (East) the creek, near an old saw mill. It is probably *Digger Pine*. Redwood does not cross the creek - that being the boundary line of its range eastward." Apr. 1900. Fred. Hermann.

- Pines of California. Turpentine from Cal. pines. Turpentine and resin from Yellow Pine in Butte Co. in early days ^{*Digger Pine*} in tree 2 ft. diam. yields 3 to 4 gals. 1st year & more afterward. 40 gals. crude pitch = 5 gals. Erasins + 25-30 fine resin.

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Liquid of Digger P. sap. not same as turpentine = sarsine (or sarsaparilla) abietine of druggists. Distillation more difficult than in case of Yellow Pine. — Hittell, Resources of California, p. 202-204.

- Valley Oak, trunks dull brown or drab - bark checked into small plates, the fissuring running well down ^{into wood}. See spms. of bark ^{nearly} from Visalia, Stewart, Mar. 1903. Bark $1\frac{1}{4}$ in. thick. Place in wheat field where Valley Oak has been cut out ^{come} up to woods, not wheat!!

1912.

- *Pinus ponderosa*, See Rep. State Min. 1880-82, p. 209, re turpentine *P. sabiniana*. l.c. p. 210.
- *Salix nigra*, as a protector of of river banks. Rothrock, J.T., Statein. Penn. Dep. For. p. 136 (1901-2).
- Timber in Mendocino and Humboldt. See State Agr. Soc. Rep. 1903.
- Cercis. It is from these concealed but living buds that Cercis flowers and *Gleditsia* spines will often appear from trunks many years old. — Thos. Melhan, Proc. Phil. Acad. 23; 106.

Berkeley

- Harry Ashland Greene says: Chickadees take the seeds of *Abies concolor*, they never miss a fertile one, and store them. I have found their caches. - Manzanita berries may take 3 years to germinate, their seeds are so hard.

- Malarial fever and trees. Dense forested Dismal Swamp of Va. + N. C. free from malaria and perfectly healthy. Eucalyptus as swamp drainers. (Forester, vi. p. 11.)

August, 1911.

- The Washburns of Yosemite State Game + Fauna advocated yearly burning of the forest many years ago before there were forest reservations - Col. A. G. Freeman.

- Monterey Pine. cones require 2 or 3 years to ripen well - Dr. Kellogg.

- Incense Cedar, borers ruin wood after it is in lumber about Mt. Shasta.

- Timber Line - position determined mainly by a mean annual temp. of 32° F. but locally is reg. by soil conditions, snow-fall, sev. of winter storms, exposure to sun. - of Nat. Geog. Mag. 14: 80.

Berkeley

-*Brunus emarginata* Dougl.
 type loc. Columbia River, Kettle Falls.
 is prob. dif. from the shrub which
 so extensively colonizes high slopes
 in the Sierra Nevada and which
 must go under Greene's name
B. californica allio' Greene knew
 nothing of its wide extent
 and dominance in the Sierra
 Nevada in its proper altitude.
 I am surprised to find in no book
 any account of this shrub in the
 High Sierra where it colonizes
 extensive slopes at 6000 to 9000 ft.,
 is very uniform in its habit
 (a spreading bush), with typically
 rather narrow leaves and bright
 red fruit. The drupe is narrow
 and a little pointed, with the

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base of the style as a persistent
 point at one end. The stone
 is ridged on one edge and the ridge
 bounded by two furrows defined on
 the outer side by a small ridge;
 on the other edge is a small
 line-like or very narrow and
 rather sharply defined single
 furrow or line-like excavation. I
 get stones in which the two
 channels or furrows on the
 ventral edge are as sharply
 defined as in an apricot
 stone; in others the marking is
 variable. The drupes from the
 Sierra are narrower and more
 pointed than, it seems to me, I
 had fully comprehended. In this
 respect differing most markedly
 from the type or true *emarginata*.

Berkeley

- At our mine near Mariposa we burned forty cords of wood a day. It was Digger Pine (which burns well dry), White Oak (*Quercus douglasii*), Black Oak (which makes a much better fuel) - Ned Blake, Aug. 1911.

- Fuel in S. Cal. Native red + white oaks, juniper, mesquit, rapidly diminishing, \$10⁰⁰ - \$11⁰⁰ a cord.
Eucalyptus - \$7⁵⁰ - \$9⁰⁰ a cord. - R.E.C. Stearns on Eucalyptus. See Separate.

Aug. 1911.

- *Sequoia gigantea* - Ned Blake says: Big Tree wood is harder and of closer grain than Redwood. Professor Miller's house is finished in it. It was offered him at Fresno after the earthquake (when Redwood was so hard) to get as "Redwood". It turns brown a good deal than Redwood, aging of a different color. I added that it was brittle, breaking straight across, instead of splintering like Redwood. - Aug. 1911.

Berkeley

- *Quercus incana* - White Thorn - Saunders, Bot. 12 says: A great deal of this occurs in Mendocino + Humboldt on the ridges. It forms thickets and it has long sharp spines and is a terror to survivors. It is very white. [No specimens brought.]
- *Arctostaphylos*, Brandt speaks of a species on the Mendocino coast which "is different" and stump-sprouts, whereas other species do not stump-sprout. - Aug, 1911.
= Probably *A. glandulosa*.

Aug, 1911.

- Snow and Tan Oak. - Saunders, Bot. 12. says: Snow is a far greater factor in relation to fire than brush in Mendocino Co. I have seen the Tan Oak branches and tops broken down so badly that they formed a serious fire menace. Piles of branches accumulated in dangerous heaps. Young trees especially cannot stand up under the strain and collapse. Dead limbs rest against trunks and so fire eats through bark. - Aug, 1911

Berkeley

- *Salix*. P.H. Riddock, 401 Calif. St. S.F. writes that willow roots were buried 30 years under buildings & then sprouted after fire. See my letter in reply. Will willow stump-sprout any time of the year? ~~He~~ ^{Do} winter say when sap is down? - Aug. 22, 1911. See Cal. Trees letter file.

- *Arbutus menziesii*. Very large tree, and known in the region as such, on ranch of Hoffmiller, 18 ft. circ. at base - Sonoma Valley. See letter of Hillon in Trees Cal. file.

1911.

Tallest & Biggest Tree

- Tree in the Calaveras Grove = 365 ft. h. acc. J.M. Hubelings, in Foley, Yosemite Guide, p. 112. Must be an error.
- Cf. The Giant Forest, pamphlet, ^{adv.} p. 11 (1911).

- California Walnut. Judge Minar thinks this the finest street tree. Takes a good shape and grows rapidly, is deciduous and its leaves fall at once. I spoke about the aphid but he had never observed the effects and was evidently thinking of the tree as it grows in the San Joaquin. He also spoke of the

Berkeley, Mar. 24, 1912

cont. prev. p.

Sycamore which had been planted in the San Joaquin at Modesto and are making fine young trees but thinks they will all become hollow (altho' sound now) after a few years. Points out that all the native Sycamore trees in creek bottoms are hollow [this is doubtful] and regards the Modesto tree as of the native species. I judge he recognized only the generic characters and would not distinguish the Californian from the Eastern or the Oriental. [See p. 181].

No. 2. Release Cañon

" 3. Header Trach. Artemisia
calif + Admos. fascic. valley
has blue oak in foreground
of valley.

Addresses.

- Miss Anderson, daughter of
Dr. C. L. Anderson, Mt.
Herman P.O.
- Mr. Thomas, Felton P.O.
about one mile from,
Knows stations for
Stump Cabbage.

Addresses; Three Rivers.

- Richard Childers, Milo, P.O.
 - Miller boys. See their addresses in
vol. 22,
p. 189.
 - Mr. & Mrs. Ernest Britten.
Erma, Marcella. (Miss Hansen)
(Marsie)
 - Mr. & Mrs. Frank Britten.
Clarence, Youngie, & Bob.
- Harry Britten, a son by first
marriage.
 - Mr. & Mrs. Noel Britten
Viva. and the Baby.
 - Mr. Welch
 - Mr. Austin (Blacksmith.)
 - Mr. Walter Fry
Clarence Fry. (Mr. & Mrs.
McKinnon)
 - Mr. Charles Blossom. Three Rivers
 - Mr. Behwell, Coyote sharp.
-
- Wilsons Inn. Napa Range, \$1 fare
from Napa; \$2⁰⁰ a day.
 - Miss Herron, Atlas Peak School,
Atlas P.O., Calif.

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- Camera Meter.
- Blotter.